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**THESIS**

**IDENTIFYING AND RETAINING QUALITY NAVAL  
OFFICERS: A QUANTITATIVE ANALYSIS OF JOB  
MATCHING AND LATERAL TRANSFERS**

by

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March 2017

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# **IDENTIFYING AND RETAINING QUALITY NAVAL OFFICERS: A QUANTITATIVE ANALYSIS OF JOB MATCHING AND LATERAL TRANSFERS**

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## ABSTRACT

The Secretary of the Navy's Sailor 2025 and Talent Management initiatives aim to improve the Navy's personnel management processes in an effort to attract, train and retain high-quality personnel. This study examines job performance measures among Navy officers on their initial job assignment and among officers who completed a lateral transfer and redesignation. Using longitudinal data on several cohorts of Navy officers, and a multivariate regression analysis approach, the findings suggest that officers who lateral transfer have higher retention and promotion rates than other officers. When the analysis is conducted by community, the findings show mixed retention and promotion effects. Performance is further examined via fitness reports scores, showing lower individual trait averages for males who lateral transferred into the Unrestricted Line communities, and higher trait averages for females who lateral transferred into Restricted Line/Staff communities. These results suggest that lateral transfers might increase the quality of the job match. Further research should consider using detailed lateral transfer board data in order to differentiate between lateral transfers or redesignations, as well as to account for the characteristics of those who are approved or denied a lateral transfer.

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## LIST OF ACRONYMS AND ABBREVIATIONS

AEDO	Aerospace Engineering Duty Officer
AMDO	Aviation Maintenance Duty Officer
AQD	Additional Qualification Designator
BUPERS	Bureau of Naval Personnel
CEC	Civil Engineer Corps
CHC	Chaplain Corps
CNA	Center for Naval Analyses
CW	Cryptologic Warfare
CWE	Cyber Warfare Engineer
CWO	Chief Warrant Officer
DC	Dental Corps
DMDC	Department of Defense Manpower Data Center
EDO	Engineering Duty Officer
EOD	Explosive Ordnance Disposal
FAO	Foreign Area Officer
FITREP	Fitness Report
FTS	Full Time Support
FY	Fiscal Year
HR	Human Resources
INTEL	Intelligence
IP	Information Professional
IRR	Inactive Ready Reserve
IWC	Information Warfare Community
JAG	Judge Advocate General Corps
KSA	Knowledge, Skills, Abilities
LDO	Limited Duty Officer
LPM	Linear Probability Model
MC	Medical Corps
METOC/OCEANO	Meteorology/Oceanography
MILPERSMAN	Military Personnel Manual

MSC	Medical Service Corps
MSR	Minimum Service Requirement
NC	Nurse Corps
NFO	Naval Flight Officer
NOOCS	Navy Officer Occupational Classification Standards
NPC	Navy Personnel Command
NPS	Naval Postgraduate School
NR ENGINEER	Naval Reactors Engineer
NR INSTRUCTOR	Naval Reactors Instructor
NROTC	Naval Reserve Officer Training Corps
NSW	Naval Special Warfare
OCM	Officer Community Manager
OCS	Officer Candidate School
OMF	Officer Master File
OPA	Officer Program Authorization
OPINS	Officer Personnel Information System
OPNAVINST	Chief of Naval Operations Instruction
PAO	Public Affairs Officer
PMP	Permanent Military Professor
RL	Restricted Line
SC	Supply Corps
SECNAV	Secretary of the Navy
SELRES	Selected Reserve
SWO	Surface Warfare Officer
URL	Unrestricted Line
USNA	United States Naval Academy

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From day one at the Naval Postgraduate School, there was always this “dirty” word *thesis* hanging over our heads. Although it has been a long time in the making, I’m happy to say that it is now done. But it would not have been possible without the tremendous support and assistance of a select few, acknowledged here.

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## I. INTRODUCTION

Military leadership is consistently seeking to attract, develop, and retain a high-quality, diverse workforce. Several recent campaigns, such as “Force of the Future” and “Talent Management” issued by the Secretary of Defense and Secretary of the Navy, respectively, aim to improve Talent Management processes of personnel across all the services. Former Secretary of Defense Ash Carter addressed top military leaders in a memorandum titled *Force of the Future: Maintaining our Competitive Edge in Human Capital* by stressing that one of his “top priorities is to ensure the Force of the Future remains as great as the Force of Today, especially in terms of our most important competitive edge—our people” (Carter, 2015).

Likewise, former Secretary of the Navy (SECNAV) Ray Mabus has implemented and continues to enact myriad initiatives that fall under the Talent Management umbrella. According to Mabus, the Navy “need[s] a force that draws from the broadest talent pools ... attracts and retains innovative thinkers, provides flexible career paths, and prioritizes merit over tenure” (Mabus, 2015). SECNAV has endorsed several innovative programs, including providing flexible career paths for both officer and enlisted personnel, expanding the Career Intermission Program (CIP), increasing graduate studies at prominent civilian institutions, and establishing industry tours to gain insight and experience from successful industry leaders (Secretary of the Navy, 2015). While these revolutionary programs appear valuable for the Navy, their long-term implications for high quality personnel management have yet to be realized.

One definition of high quality Navy personnel refers to the quality of the match between individual’s skills and capabilities, and the job requirements (Werenskjold, 2017). An existing officer management tool the Navy has at its disposal to improve the quality of job match is the lateral transfer and redesignation process. This thesis examines the role the lateral transfer and redesignation process plays as a potential tool for Talent Management. Current Navy institutional processes are discussed in Chapter II.

## **A. PURPOSE**

The Navy has been investing considerable effort into the Talent Management initiative due to the expansive nature of the concept. Defining and measuring high-talent among Navy personnel and their fit with job requirements is one definition of quality. This effort is a challenge for any organization, as definitions of talent and quality are tied to the values of the organization. This is especially challenging for the Navy, given the diverse mission areas and specialties of the officer corps.

This thesis seeks to examine the definition of talent, and quality among Navy officers. The thesis aims to investigate the extent to which the initial job match is high quality. It also seeks to analyze the role the lateral transfers and redesignation process plays in improving the quality of the job match. To explore these two areas of interest, the thesis will examine job performance measures of Navy officers in their initial assignment, and in assignments post- lateral transfer and redesignation.

The findings of this thesis will bring additional depth in understanding how the lateral transfer process may be utilized to improve the career match of naval officers, and therefore, the quality of Navy personnel. The benefit of this study is to contribute to the Navy's efforts to implement SECNAV's Talent Management initiatives by providing insights to assist leadership in improving matching, assignment, training, and retention of talented Navy personnel.

## **B. RESEARCH QUESTIONS**

This thesis seeks to identify factors that account for officer quality by examining the relation between officers' characteristics and their job performance among those who are in their initial job assignment and those who completed a lateral transfer and redesignation. Primary and secondary research questions are as follows:

Primary research questions:

1. How does retention and performance of Navy officers who complete lateral transfer and redesignation compare to the retention and performance of officers who do not lateral transfer or redesignate?

2. What career and background factors explain any differences in retention and performance measures among offices who completed a lateral transfer and redesignation and those who did not?

Secondary:

1. How can the Navy's use of the lateral transfer and redesignation process be better aligned with its Talent Management efforts?

## **C. SCOPE AND METHODOLOGY**

The scope of this thesis includes a quantitative analysis of the characteristics that determine officer talent and quality. The thesis uses a large data set that captures individual-level data on several cohorts of officers who joined the Navy between 1999 and 2003. The data set is longitudinal and follows each officer annually until 2016, or until separation. Data is collected from Department of Defense Manpower Data Center (DMDC), Officer Personnel Information System (OPINS), and Bureau of Naval Personnel/Navy Personnel Command (BUPERS-NPC).

Utilizing this longitudinal officer personnel data, this study: (1) identifies talent via professional indicators of knowledge, skills, and abilities (KSA) (e.g., education); (2) analyzes the effect of the talent indicators on selected officer performance measures (e.g., promotion, fitness report scores); and (3) uses the results of the statistical analysis of the lateral transfer data to assess career/ job match quality. Statistical analysis and regression models are utilized to examine the effects on retention and performance for officers who completed lateral transfer/redesignation, compared to other officer groups. These models reflect indicators of talent and measures of performance, which are applied to the definition of quality, under the Talent Management umbrella.

## **D. ORGANIZATION**

This thesis consists of six chapters. Chapter I presented the introduction and an outline of the problem, purpose, research questions, and scope of the study. Chapter II provides background information regarding the institution policies and practices regarding the Navy's lateral transfer and redesignation process. Chapter III is a review of previous studies on lateral transfers selected from the literature. Chapter IV offers a detailed description of the variables used in this study, in addition to the statistical

methods. Chapter V presents the results and findings from the statistical analyses. Chapter VI summarizes the overall study and provides recommendations regarding the implications for Navy manpower.

## **II. BACKGROUND**

This thesis focuses on identifying and retaining quality officers, with a particular focus on the Navy's lateral transfer and redesignation process. The process of lateral transfer and redesignation, however, is not itself an indicator of quality. Rather, the lateral transfer and redesignation process can act as a mechanism to improve the job match of Navy officers and, therefore, has the potential to improve the quality of performance of Navy officers. The question then pertains to the quality of officers who go through this process, including the quality of performance of those who are approved versus those who are disapproved. This is an important distinction, keeping in mind, however, that selection for transfer is constrained by releasing and receiving communities. It is important to recognize the current organization of the Navy officer corps, the role of the lateral transfer and redesignation process in manpower planning, and how the Navy utilizes this tool based on manning and force shaping needs.

### **A. OFFICER CORPS MANPOWER COMPONENT**

United States Code, Title 10 grants authorization for the appointment of commissioned officers, outlining basic qualifications and categorization, across the various military services. Officers within the Navy are divided into two distinct duty statuses, active duty or reserve. Reserve duty personnel are further delineated into Full Time Support (FTS), Selected Reserve (SELRES), or Inactive Ready Reserve (IRR) status.

Within the officer corps there are added distinctions that categorize officers to specific communities, mainly the Unrestricted Line (URL), Restricted Line (RL), Staff, and Limited Duty Officer (LDO) / Chief Warrant Officer (CWO) communities. Within these communities, officers are additionally categorized by specialty or skill set, known as designators, which are discussed more thoroughly in the following sections.

## **1. Unrestricted Line Officers**

The URL community is comprised of the Surface Warfare, Aviation, Submarine Warfare, Naval Special Warfare (NSW), and Explosive Ordnance Disposal (EOD) communities. These communities represent the primary warfighting, or operational, forces. URL officers hold the unique responsibility of commanding operational units. URL communities access personnel primarily through commissioning programs such as the United States Naval Academy (USNA), Naval Reserve Officer Training Corps (NROTC) programs, Officer Candidate School (OCS), or various enlisted-to-officer programs. From the perspective of lateral transfers, these communities are the primary source of transfer applicants.

## **2. Restricted Line Officers**

Officers within the RL communities are considered officer specialists and fulfill a supporting role to the URL communities. The RL encompasses a plethora of communities and includes the following: Aerospace Engineering Duty Officer (AEDO), Aviation Maintenance Duty Officer (AMDO), Engineering Duty Officer (EDO), Foreign Area Officer (FAO), Human Resources (HR), Information Warfare Community (IWC), Naval Reactors Engineer (NR ENGINEER), Naval Reactors Instructor (NR INSTRUCTOR), Permanent Military Professor (PMP), and Public Affairs Officer (PAO) (Naval Personal Command). Furthermore, the IWC is a grouping of several other officer communities, to include: Cryptologic Warfare (CW), Cyber Warfare Engineer (CWE), Information Professional (IP), Intelligence (INTEL), and Meteorology & Oceanography (METOC or OCEANO).

RL communities are more reliant on the lateral transfer process for their accessions, although direct and student-based commissioning programs do exist for these communities. The lateral transfer process also plays a significant role for these types of communities at their formulation. Some RL communities, especially within the IWC, are fairly new to the Navy organization. Therefore, the Navy is able to draw from existing communities, via the lateral transfer process, to populate the newly formed officer communities.

### **3. Staff Officers**

Staff corps officers are composed of the following communities: Medical Corps (MC), Dental Corps (DC), Medical Service Corps (MSC), Judge Advocate General Corps (JAG), Nurse Corps (NC), Supply Corps (SC), Chaplain Corps (CHC), and the Civil Engineer Corps (CEC) (Navy Personnel Command). These communities offer support in administrative, logistical, and medical capacities. Due to the nature of their specialization, many staff communities have direct accession programs; however, lateral transfers are also a source of accessions.

### **4. Limited Duty Officers / Chief Warrant Officers**

The LDO and CWO communities are comprised of officers who have acquired specialized, technical skill sets during an enlisted career. These officers capitalize on their professional experience and know-how to provide additional support to the other communities. Due to the nature of these communities, accessions are not achieved via the lateral transfer process, but rather through specific LDO/CWO commissioning programs. However, LDOs do have the opportunity to lateral transfer to other communities. For the sake of this study, LDOs and CWOs are excluded, due to their unique professional track and a lack of significant data.

## **B. CURRENT OFFICER PROFILE**

The Navy evaluates its officer and enlisted personnel on a monthly basis via end strength reports. Figure 1 reflects the current active duty officer inventory of the Navy, categorized by community, as of August, 2016. Figure 1 shows that URL communities account for 49 percent of the officer corps, while staff communities account for the next largest category at 29 percent (Acker, 2016). RL and LCO/CWO communities are small, encompassing 12 and 10 percent, respectively, of the Navy's total officer corps. From these overall percentages, the percentages of officers by specific designator within the line, staff, and LDO/CWO communities are further broken out, annotated by the individual tables within Figure 1.

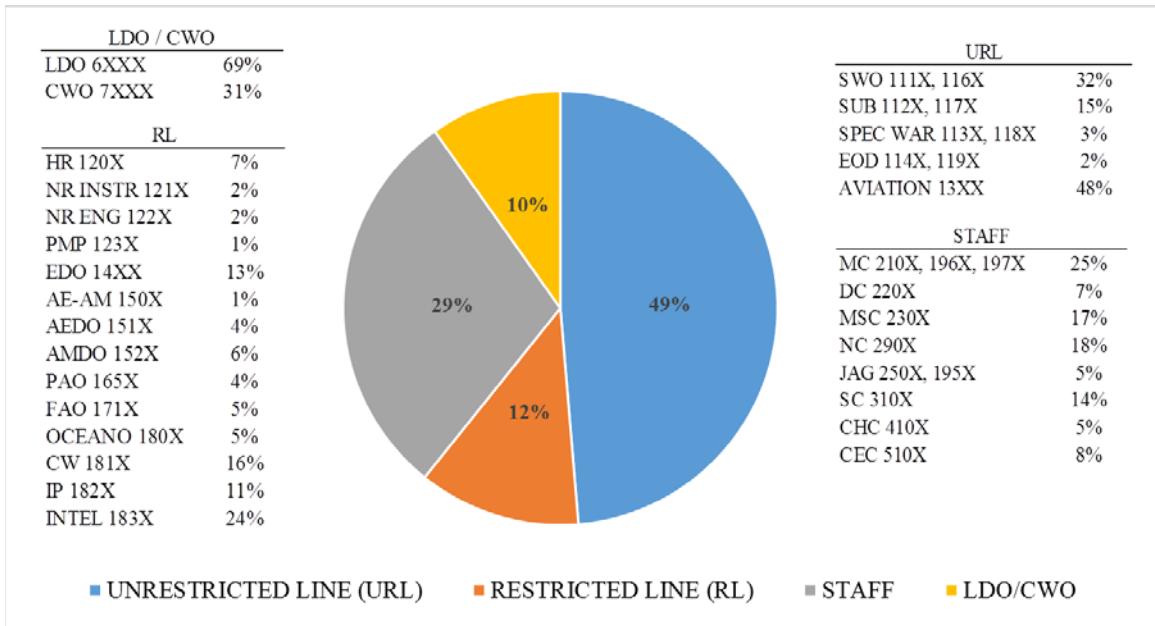


Figure 1. Officer Inventory by Community as of August 2016.  
Adapted from Acker (2016).

Figure 2 shows a side-by-side comparison of officer inventory and Officer Program Authorization (OPA) of each officer community. As of August 2016, the aggregated officer inventory exceeds OPA by 228 officers (Acker, 2016). These figures are important for comprehending the existing profile of the officer corps. The relationship between communities is also vital to assess what impact the lateral transfer and redesignation process may have on each respective community, and the management efforts of the officer corps as a whole.

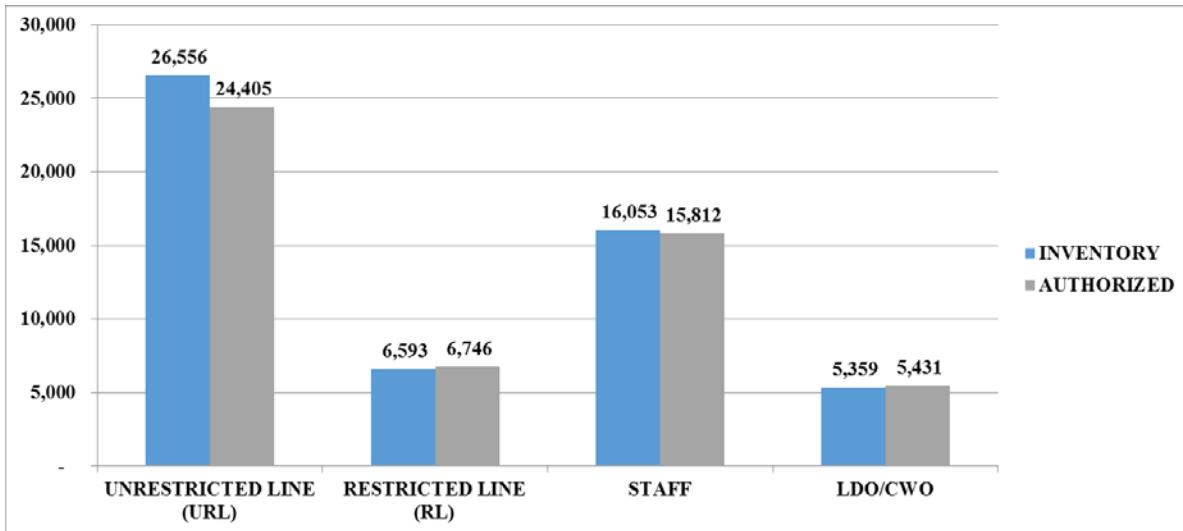


Figure 2. Officer Inventory and Officer Program Authorization (OPA)

Comparison by Community as of August 2016.

Adapted from Acker (2016).

### C. AUTHORITY AND DEFINITIONS: REDESIGNATION VS. LATERAL TRANSFER

Just as the Navy is constantly assessing the composition of the officer corps, there are additional means for managing officer personnel. Various metrics exist to assist in shaping the force through the lens of both manpower (bils) and manning (bodies). Scholastic programs, recruiting and retention bonuses, milestone or promotion boards, to name a few, are examples of tools that are used to manage personnel. Thus, the lateral transfer process is simply another force management tool which allows for career matching within the officer corps. Specifically,

The lateral transfer and redesignation process is a key tool by which Navy manages the talents of its officers. It provides flexibility in officer community manning and improves the Navy's return on investment in officer training and education by optimizing the specialized skillsets of officers throughout their careers. (Office of the Chief of Naval Operations, 2015)

Thus, the Navy is able to maximize their utilization of officers by ensuring a balance between existing officer personnel and the needs of the Navy's various communities. Essentially, this is the primary tool by which the Navy balances officer career preferences

and inherent and acquired skill sets needed by various communities, to ensure the overall health of the Navy's officer corps.

Authority for lateral transfer and redesignation is ultimately given by United States Code, Title 10, Chapter 539, Section 5582: Regular Navy: transfers, line and staff corps. Further authorizations are given by Department of Defense (DOD) Directive 1310.2 on Original Appointment of Officers. Finally, Navy-specific governing instructions are outlined in the 2005 Chief of Naval Operations Instruction (OPNAVINST) 1210.5, *Lateral Transfer/Redesignation and Augmentation of Officer in the Navy*, and by the 2002 Military Personnel Manual (MILPERSMAN) 1212-010, *Lateral Transfer and Change of Designator Codes of Regular and Reserve Officer*. These instructions are discussed further in the following section.

Although the distinction may be subtle, it is important to note that there is a difference between redesignation and lateral transfer, as the terms are often used synonymously. All lateral transfers result in redesignation; however, not all redesignation result from lateral transfers. MILPERSMAN 1212-010 provides guidance regarding these nuances. Navy Personnel Command (NPC) maintains this instruction, in addition to being ultimately responsible for designator assignment. Officer designation codes are listed in the first volume of the Manual of Navy Officer Manpower and Personnel Classifications (otherwise known as the Navy Officer Occupational Classification Standards, or NOOCS Manual).

The NOOCS states that officer designation codes are “used to group officers by categories for personnel accounting and administrative purposes and to identify ... the categories in which officers are appointed and/or designated” (Department of the Navy, 2017, p. A-3). Under this definition, all officers appointed commission in the Navy have an associated designator that depicts their individual community and status.

MILPERSMAN 1212-010 offers guidance on the circumstances in which NPC may adjust a designator administratively, outside of the board process. Redesignation may occur in this sense when officers within certain communities are in a training status and achieve personal qualifications, recognizing their standing as a professional in the

field. Other redesignations may occur at the culmination of professional education, mainly for medical or judge advocate students to the staff corps. Disenrollment from training programs is also cause for redesignation, where training attrites may simply redesignate into another community in lieu of separation from the Navy.

Conversely, a lateral transfer occurs when officers request transfer across the various URL, RL, and Staff communities, by applying to a formal board. As a result of selection from the board, officers are then redesignated into their new community. However, for the sake of this study, all lateral transfers and redesignations are considered together for analysis.

#### **D. LATERAL TRANSFER BOARD: ELIGIBILITY AND PROCESS**

In order to apply to the formal lateral transfer board, an officer must first meet certain eligibility requirements. These requirements vary across URL community, and are expressly laid out in the MILPERSMAN 1212-010. However, OPNAVINST 1210.5 provides overall eligibility guidance in addition to board processes.

Under the OPNAV instruction, officers must have fulfilled a minimum of 24 months of commissioned service. URL officers must be within one year of their end of obligated service before they may apply to the board. (Of note, the MILPERSMAN states that officers must be within six months of end of obligated service; however, Dailey [2013] states this pertains only to medical officers.) URL officers must also have achieved their respective warfare qualifications, and meet all requirements of the gaining community in order to be eligible. They must have earned at least a baccalaureate level degree. Additional specific guidance for specialty trained officers—such as nuclear, medical or judge advocate personnel—is provided due to the nature of advanced training in these communities. Officers are ineligible if they have been approved for, or are being processed for, separation, resignation or retirement. Furthermore, if officers have received a special bonus pay, they are ineligible until they complete one year of obligation. Surface Warfare officers are also ineligible if they possess orders to attend department head school, and may apply to the board only after completion of their first

department head tour. Some requirements may be waivable if the officer is within a specified timeframe of achieving said requirement.

Should officers meet all of these eligibility requirements, they may then submit a formal package to the lateral transfer and redesignation board. The board convenes on a semiannual basis. Board members review submitted packages and other professional personnel files, working within the constraints of community quotas. Selection for lateral transfer and redesignation is a two-part process. The current community must first release the officer applicant; secondly, the gaining community must choose or accept the applicant. Applicants who are chosen for transfer incur an additional two years of obligated service, from the designator change date. Officers are notified of their selection via Navy message and, should they accept, are generally officially redesignated within 60 days (Chief of Naval Operations, 2005, p. 8).

### **III. LITERATURE REVIEW**

This thesis examines the effects of job placement and career matching in the Navy officer corps via the lateral transfer and redesignation process. While there is extensive literature on this topic, this section reviews the most relevant previous studies on lateral transfers to provide insights into the analysis framework of this thesis.

#### **A. CENTER FOR NAVAL ANALYSES STUDIES**

##### **1. Aligning URL Careers with Lateral Transfers**

Rodney and Kearn (2008) investigate the possibility of merging the various career screening processes of officer communities via the lateral transfer and redesignation process. The authors accomplish this by assessing the demand for RL/Staff officers, the URL communities' ability to supply officers, to what extent supply matches demand, and thus possible integration of the lateral transfer process with other existing processes.

Rodney and Kearn analyzed Officer Program Authorizations (OPA) and Officer Community Manager (OCM) accession plans to demonstrate accession sources for each community. These accession plans for FY 2008 are shown in Figure 3. They compare this data with lateral transfers in Center for Naval Analyses' (CNA's) existing archive of officer longitudinal data.

Officer Community	Total Accessions	Direct Accessions	Training Attrites	Lateral Transfers	Lateral Seniority
<b>RL</b>					
Human Resources	30	<5%	15-50%	>50%	O-3 to O-5
EDO	50	0%	5-15%	>50%	O-3
AEDO	30	0%	0%	100%	O-3/O-4
AMDO	25	>50%	15-50%	5-15%	O-3/O-4
IP	80	0%	15-50%	>50%	O-3/O-4
Information Warfare	60	>50%	15-50%	15-50%	O-3/O-4
Intelligence	120	>50%	15-50%	15-50%	O-3/ Jr. O-4
PAO	20	5-15%	15-50%	>50%	O-3
FAO	60	0%	0%	100%	O-3 to O-5
Oceanography	35	15-50%	15-50%	15-50%	O-3/ Jr. O-4
<b>Staff Corps</b>					
Medical communities	900	>50%	<5%	<5%	--
JAG	80	>50%	0%	5-15%	O-3
Supply	250	>50%	15-50%	<5%	--
Chaplain	50	>50%	<5%	<5%	--
CEC	120	>50%	15-50%	15-50%	O-3

Figure 3. OCM Accession Plans Summary. Source: Rodney & Kearn (2008).

This study is relevant in that not only does it differentiate between voluntary lateral transfers and training attrites, but it also accounts for the process's inherent characteristic of being "constrained by both the losing and gaining communities" (Rodney & Kearn, 2008, p. 21). As discussed in the Background chapter of this thesis, lateral transfer and redesignation occurs by a two-step process in which the losing community must first ensure its manning needs have been met before allowing the release of an officer. The second step occurs when the gaining community selects desirable candidates to meet its manning needs. Rodney and Kearn provide an alternative perspective from the Moore and Reese (1997) study, as they primarily focus on lateral transfers from the URL to the RL or staff communities, with more emphasis on community needs. The authors state that the RL and Staff OCMs are heavily reliant on the lateral transfer process for accessions (as reflected in the data in Figure 3). However, OCMs of supplying communities are often hesitant to release their officers. For example, "the SW community, and to a lesser extent, the submarine community are finding it very difficult to meet their control-grade requirements and are, understandably, resistant to allowing officers to transfer into other communities" (Rodney & Kearn, 2008, p. 29).

Ultimately the study shows that there is a mismatch between URL inventories and billets, largely due to the URL's (Surface and Subsurface) under-manning at control grades and over-manning at junior officer ranks (the Aviation community reflected the inverse). Consistent with other literature, the results also show that the surface community provides the vast majority of lateral transfers; aviators provide the most training attrites and control grade transfers, and subsurface provides the least number of officers (Rodney & Kearn, 2008, p. 38).

## **2. The Lateral Transfer System: How Well Does it Serve Officers and Communities?**

Moore and Reese (1997) study the effects of lateral transfers and redesignations on officer careers and the various communities. They identify two possible avenues by which lateral transfer occurs (also addressed in the Background chapter above): (1) via attrition from training in initial community, and (2) by request. Moore and Reese (1997) argue that “even though the Navy makes every effort to match officers to the correct URL community, there is no guarantee that the matches will be appropriate ... redesignation may allow them to do their best while they are still on active duty” (p. 5). Lateral transfer may therefore be beneficial; however, are officers who attrite from training considerable quality accessions for other communities? And wouldn’t the process of changing communities be disruptive to the officer’s career? Moore and Reese address these questions in their study.

The study used data from CNA’s Officer Longitudinal File, which is sourced annually from the Officer Master Files (OMF). The study contained 63,516 officers from year groups 1975 to 1995, with a primary focus on URL communities of Aviation, Surface, and Subsurface Warfare. Moore and Reese utilize this data in several models to test effects of training attrition, career outcomes, and general effects for the RL and Staff communities.

The training attrition model shows that overall, “about 25 percent of officers in the sample did not qualify in their original communities. ... Of these, about 42 percent left the Navy before qualification, and 58 percent lateralized to another community (URL,

RL, or Staff)" (Moore & Reese, 1997, p. 11). To look at these training attrition effects more closely, the model considers additional variables such as undergraduate record, family status at accession, age of accession, and cohort size. Logit regressions are used to estimate the marginal effects of these variables on the probability of qualification in the first source community.

The career outcomes model shows the effects of lateral transfer for those who transfer within URL communities due to training attrition, based on the assumption that "if low quality drives redesignation, laterals-in are likely to show unfavorable career outcomes in their new communities as well" (Moore & Reese, 1997, p. 23). The model utilized career variables of length of service, qualification in new community, retention to department head, future transition to RL or Staff, achievement of O-4 grade, and graduate education, and is presented in order of gaining community.

Their results find that the Naval Flight Officer (NFO) community is the primary source for the pilot community accessions (roughly 50 percent), with 43 percent from the surface warfare community and the remainder from the subsurface community. Overall, officers who lateraled into the pilot community were not found to be any more or less successful than their counterparts who originated in the community. In fact, Moore and Reese further state that "the results also suggest that these officer were mismatched to their original communities, and that the lateral transfer system provides a way to improve match quality" (1997, p. 25). This is not the case, however, for the surface warfare community, which receives the bulk of its lateral transfers due to training attrition from other communities. Results show that only "fifty-six percent of [Surface Warfare Officer (SWO)] laterals-in eventually achieve SWO qualification. This is far less than the 72-percent qualification rate for original SWO accessions" (Moore & Reese, 1997, p. 26). Moore and Reese attribute this to motivation level of attrites, the gaining community mishandling these types of accessions, or simply poor career matches to begin with. Further regressions run on those officers who do qualify in the SWO community reject the hypothesis that it is the fact of lateral-in that causes lack of qualification. Those officers who do qualify show only a slight difference in retention and promotion levels compared to those who originated in the community.

The last model of this study is of particular interest as it concerns lateral transfers to RL and Staff communities. Navy policy during Moore and Reese's (1997) study was to allow RL and Staff communities a chance to access training attrites only after the URL communities. This combined with the fact that a high percentage of those attrites left the Navy all together resulted in "few officers ever lateral-transfer[ing] to the RL or Staff communities" (Moore & Reese, 1997, p. 20). Data analysis however shows competitive selectivity rates to RL and Staff communities which the authors took to suggest that the manning requirements of these communities were met.

Overall the study provides helpful insight into the lateral transfer and redesignation process by providing research to show markedly little difference in the career progression and retention of officers who transfer within the URL communities. However, the authors also noted the rate at which URL officers transfer to RL or Staff communities. Figure 4 reflects the percentages of these transition patterns from the dataset, which shows that only 6.8 percent of the sample ever transferred between URL communities, before then transferring to RL or staff.

Pattern	Percentage
Surface to RL/Staff	44.0
Pilot to RL/Staff	17.1
NFO to RL/Staff	13.1
Submarine to RL/Staff	11.6
First URL to second URL to RL/Staff	6.8
URL to other to RL/Staff	5.5
RL/Staff is fourth community	<u>1.9</u>
All	100.0

Figure 4. Transition Patterns to RL and Staff Communities. Source: Moore & Reese (1997).

Admittedly, the authors did not explore the full effects of lateral transfer into RL or staff communities, and focused primarily on transfers within the URL communities. They were unable to evaluate the quality of lateral transfers, since quality measures for these communities are not available in their dataset. Additionally, the dataset itself is somewhat dated, and institutional practices regarding the lateral transfer process have changed.

### **3. The Navy Officer Lateral Transfer Process and Retention: A Statistical Analysis**

In their research, Kleyman and Parcell (2010) study comprehensive retention effects, as reflected by loss rates, for lateral transfer applicants who were approved in comparison to those applicants who were disapproved. They also explore these losses from the perspective of quotas from supplying communities during the lateral transfer process. Although this study is similar to Rodney and Kearn's study, which also addresses the two-sided perspective of the lateral transfer process, the study addresses the inherent issues with the trade-off between officer retention as a whole and officer retention within supplying communities. Again, supplying communities may be hesitant to release lateral transfer applicants if the manning needs, or quotas, of that community have not been met. Ultimately, this study examines the issue of "whether the lateral transfer process actually helps overall retention of officers by allowing better job match to occur" (Kleyman & Parcell, 2010, p. 8).

Descriptive statistical analysis is applied to 2,281 regular active duty officers who applied for lateral transfer from June 2004 to November 2009. Multiple variables were included in the models, to include total number of applicants per board, the frequency of number of attempts/applications to the board, supplying community, accession source, promotion outcome prior to application, board decisions, and various other demographic and professional characteristics. Logistic regressions were then estimated to determine the probability of loss to the Navy given these variables.

The results show that, overall, the Navy incurs higher risk to officer retention when applicants are disapproved due to supplying community quotas. From the data,

42 percent of board applicants were approved, 50 percent were disapproved, and the rest were deemed ineligible by PERS8. Interestingly, females were disapproved more often than males. The retention model, measured at the 36-month mark following the board, found that

about 10 percent of the approved applicants left the Navy subsequent to the board date (about 90 percent retained), while 26 percent of the applicants who were disapproved by the board left the Navy (about 74 percent retained). Almost half of the applicants who were rejected by PERS-8 left the Navy subsequent to the board. (Kleyman & Parcell, 2010, p. 23)

Furthermore, Figure 5 reflects the probabilities of loss associated with various individual characteristics and other factors that were statistically significant in the logistic model. Of note, officers who are passed over for promotion have a higher likelihood of leaving the Navy than those who have been selected for promotion. Supplying, or current, community additionally appears to have an effect on loss probability. Females are no more likely to leave than males according to the model.

Kleyman and Parcell conclude that there are several reasons why applicants may not be selected for lateral transfer, such as lack of qualifications, competition, or quotas. Whatever the reason, when qualified officers are not authorized to transfer due to supplying community quotas, despite the gaining communities' available space, the Navy faces a higher risk of losing these officers. Although the study states that only the "best and fully qualified" (Kleyman & Parcell, 2010, p. 7) are selected, it does not identify how quality is measured, or furthermore, the quality of officers who were not selected for transfer and consequently left the Navy. One of the goals of this thesis is to offer additional insight on these issues.

Independent variable	Predicted probability of loss by 36 months after the board	Marginal effect (percentage point change from baseline predicted probability)
<i>Action taken</i>		
<i>Approved by the Board<sup>a</sup></i>	9.4%	
<b>Not Approved by Board<sup>b</sup></b>	<b>41.2%</b>	<b>31.8</b>
<b>Not Sent to Board</b>	<b>44.1%</b>	<b>34.6</b>
<i>Promotion outcome</i>		
<i>Promoted</i>	21.2%	
<b>Passed over</b>	<b>52.9%</b>	<b>31.8</b>
<b>Haven't come up for promotion</b>	<b>31.0%</b>	<b>9.8</b>
<i>Starting community</i>		
<i>Aviation</i>	24.3%	
<b>Surface Warfare</b>	<b>16.2%</b>	<b>-8.1</b>
<b>Submarine</b>	<b>31.9%</b>	<b>7.5</b>
Other URL	25.8%	1.5
<b>RL</b>	<b>1.6%</b>	<b>-22.7</b>
<b>Staff</b>	<b>14.0%</b>	<b>-10.3</b>
<i>Rank</i>		
<i>LT</i>	33.8%	
<b>CAPT</b>	<b>29.5%</b>	<b>-4.2</b>
<b>CDR</b>	<b>0.0%</b>	<b>-35.6</b>
<b>LCDR</b>	<b>0.8%</b>	<b>-33.0</b>
<b>LTJG</b>	<b>34.6%</b>	<b>0.9</b>
<b>ENS</b>	<b>20.6%</b>	<b>-13.2</b>
<i>Accession source</i>		
<i>Enlisted programs</i>	19.5%	
<b>USNA</b>	<b>33.1%</b>	<b>13.6</b>
<b>NROTC</b>	<b>32.3%</b>	<b>12.8</b>
<b>OCS / AOCS</b>	<b>27.2%</b>	<b>7.7</b>
<b>Other</b>	<b>31.4%</b>	<b>11.9</b>
<i>Early training outcomes</i>		
<i>Did not change designator during initial training</i>	31.0%	
<b>Changed designators during initial training</b>	<b>22.2%</b>	<b>-8.8</b>

a. Italicized font indicates the value of the variable that is the baseline estimated probability with which other values of the variable are compared.  
b. Bold font indicates that the change in estimated probability due to the change in the value of the variable is statistically significant.

Figure 5. 36-Month Loss Model Results. Source: Kleyman & Parcell (2010).

## **B. NAVAL POSTGRADUATE SCHOOL (NPS) STUDIES**

Previous NPS thesis research reveals additional effects of the lateral transfer and redesignation process across various aspects of officer communities within the Navy. Dailey (2013), Mundell (2016), and Ryan (2007) approach this topic from differing perspectives, identifying the factors for success in selection, effects which relate to gender and retention, and the effects on the URL communities and retention, respectively.

In his study, Dailey “examines the characteristics of officers applying to and being selected by lateral transfer boards” (2013, p. 1). Probit models are employed to determine the likelihood of selection for lateral transfer based on officer characteristics (demographics and professional information). The study uses semiannual selection board results over a period from November 2010 to November 2012. Dailey also discusses the supply and demand relationship of communities, displaying the allowable quota numbers for each board within the data set. Results from the model show that rank, officer community transferring from and requesting transfer to, and years of service all show statistically significant effects on the selection probability (Dailey, 2007, p. 55). Additionally, the model does not reflect any gender difference in the likelihood of selection, holding all other characteristics constant.

Mundell (2016) studies the retention and promotion of female junior officers, with one of four probit models concerned with the effects of the lateral transfer and redesignation process. Officer information gathered from the Defense Manpower Data Center (DMDC), tracks officers commissioned between 1999 and 2003 until their separation and/or 2013. In order to determine the occurrence of lateral transfer, Mundell infers the transition based on designator changes at the four-, six-, and ten-year service mark (2016, p. 71). Model results find an overall increase in the likelihood of retention and promotion for officers who completed a lateral transfer. Specifically, “99.7 percent of lateral transfers complete MSR\_Retention [Minimum Service Requirement], 97.5 percent complete 10\_Year\_Retention, and 86.7 percent are promoted to O-4. These rates are much higher when compared with the rates of the full sample” (Mundell, 2016, p. 49).

For the sake of this thesis, it is important to note the specifics of Mundell's (2016) research, as to provide a comparative critique. Further discussed in Chapter IV, Data and Summary Statistics, and Chapter V, Models and Results, this thesis utilizes data drawn from similar sources, tracking the same cohort of officers until 2016 and/or separation. This research differs, however, in variable definitions and model specifications. Additionally, this thesis surpasses Mundell's research in that it analyzes the flow of lateral transfers, by specific community, in order to assess the quality of job matching in the Navy.

Ryan (2007) views the lateral transfer process from an alternative perspective, studying the specific effects on the URL communities and attrition. Utilizing both quantitative and qualitative analysis, Ryan explores the hypothesis that lateral transfers have detrimental consequences for those URL communities that lose officers, and furthermore, the Navy's overall lower retention of officers who apply but are not accepted for transfer. The results from multivariate logistic models suggest that the impact of lateral transfers to URL communities specifically is not necessarily negative, as officers may not retain in their URL community regardless. However, overall the model shows that "officers who apply for lateral transfer but are not selected are more than twice as likely to leave the Navy as those who are selected ... URL officers are 34 percent *more likely* to leave the Navy when not selected" (Ryan, 2007, p. 73).

## **C. SUMMARY**

The previous studies discussed in this section highlight different impacts of the lateral transfer and redesignation process, as they examined the effect of lateral transfers on retention and/or separation, promotion, and community health. Overall, the research overwhelmingly shows that lateral transfers increase the likelihood of retention, while non-selection for lateral transfer increases the likelihood of separation. Mundell (2016) shows high percentages of selected officers who retain to the 10 years of service mark. Moore and Reese (1997) shows that a large percentage of officers separate from the Navy due to initial training attrition, without seeking lateral transfer; however, for those who do seek to transfer, both Kleyman and Parcell (2010) and Ryan (2007) find that non-

selection increases the likelihood of separation. Of additional note, Kleyman and Parcell's study determines that female lateral transfer board applicants are less likely to be selected for redesignation than males. The study conducted by Kraus et al. (2013) found that females have higher rates of completion of lateral transfers than do males. However, Mundell's study shows that "women transfer laterally at rates similar to those of men" (2016, p. 72), and those who are selected are more likely to be retained, thus making the suggestion to increase female retention rates by "increasing opportunities for women to complete a lateral transfer" (Mundell, 2016, p. 53). However, Dailey's findings contradict both Kleyman and Parcell's study, and Mundell's thesis, in that the results show no discernable difference in the selection rates between males and females.

The research also shows positive effects in relation to promotion. Mundell's research displays the likelihood of promotion to be higher with officers who complete a lateral transfer. Additionally, his research does not support any differences in promotion rates between genders, reflecting similar promotion rates for males and females. Kleyman and Parcell find comparable results where officers who have been passed over for promotion have an increased likelihood of separation, and females are no more likely to leave than males.

This study expands upon the existing literature by comparing the retention and performance characteristics of officers who lateral transfer, as compared to other groups. Additionally, by defining the contributable factors for this potential difference, this study expands upon the definition of officer quality for the Talent Management initiative.

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## IV. DATA AND SUMMARY STATISTICS

This section provides a brief overview of the data used to determine the effects of lateral transfer and redesignation on officers' retention and performance, as compared to officers who do not lateral transfer across communities. Additionally, variable definitions, summary statistics, and descriptive statistics are presented in this data section.

### A. DATA DESCRIPTION

The data set utilized in this research is consolidated from several sources, to include the Department of Defense Manpower Data Center (DMDC), Officer Personnel Information System (OPINS), and Bureau of Naval Personnel—Navy Personnel Command (BUPERS-NPC). DMDC and OPINS data encompasses general personal and professional information at the individual officer level. BUPERS data consists of more detailed professional information, such as FITREP data. The data set furthermore covers several cohorts of naval officers, who joined the Navy between fiscal years (FY) 1999 and 2003, and tracks them annually until 2016, or until separation. The data does not include FTS personnel, or LDO/CWO officers. As previously stated, this dataset resembles that used in Mundell's (2016) research, with some exceptions. Mundell's data only tracked officers until FY 2013; however, several additional FY's worth of data is included in this particular dataset. Additionally, Mundell did not utilize FITREP data in his research. Lastly, this research differs in the independent variable definitions and model specifications, which are annotated in the following sections and chapter.

#### 1. Dependent Variables

The dependent, or explanatory, variables are based on officer retention and professional performance. Retention is measured by the achievement of either of two career milestones, specifically, Minimum Service Requirement (MSR) and ten years of service. Professional performance is measured by selection for promotion to the O4 paygrade and FITREP scores. Dependent variable definitions are further annotated in Table 1.

The MSR career milestone is annotated by the variable *MSR\_Retention*, indicating that an officer has completed at least six years of continuous service from commissioning. Minimum service requirements are dependent upon community and commissioning source, varying from four to six years. Therefore, the variable *MSR\_Retention* is set at six years of service to account for the differences between communities and commissioning sources. Additionally, six-year MSR has been used in previous literature, and is generally regarded as a minimum service marker.

Another career milestone is indicated by the variable *Ten\_year\_Retention*, which accounts for officers who completed at least ten years of commissioned service. The Navy has typically used this length of service as an indicator for officers who will likely complete a full Navy career through retirement. The ten-year benchmark is due to the framework of the (then) Navy retirement system, which required twenty years of active duty service to qualify for an immediate pension. Therefore, ten-year retention is commonly used as an indicator of long-term officer retention.

Table 1. Dependent Variable Definitions

<b>Dependent Variable</b>	<b>Variable Definition</b>
MSR_Retention	=1 if Months_in_Service >=72; else = 0.
Ten_year_Retention	=1 if Months_in_Service >=120; else = 0.
Promoted_O4	=1 promoted to O4 paygrade; else = 0.
TraitAvg_6to10YOS	= average of FITREP individual trait average for 6 to 10 years of service
AboveRS_RelAvg_6to10YOS	= average of ( individual trait average / reporting senior's cumulative average) for years of service 6 to 10

The variable *Promoted\_O4* specifies officer professional performance and indicates an officer was selected for, and promoted to, the paygrade of O4. The variable is used as an indicator for professional performance because all officer promotions up until this paygrade are regulated by statutory time periods per Title 10. Therefore, the O4 paygrade is the first opportunity officers have to be selected for promotion based on merit, or professional achievements. There is a plethora of ways to analyze officer FITREP data, however the variables used in this research assess individual scores, and how an individual rates in comparison to other officers. Variable *TraitAvg\_6to10YOS* is a continuous variable that is measured by an average of individual trait average scores, for FITREPs over the period of six to ten years of service. Variable *AboveRS\_RelAvg\_6to10YOS* is a continuous variable that reflects on average, if an officer is rated above the reporting senior's cumulative average, for FITREPs over the six to ten years of service period. This timeframe is used to assess officer performance after a lateral transfer has occurred. FITREP variables are discussed in further detail in the FITREP model section of Chapter V.

## **2. Independent Variables**

The independent, or explanatory, variables utilized are broken into several categories: demographics, professional background or experience, and occurrence of lateral transfer and redesignation. Demographic variables include *Age*, *Female*, *Male*, *Married*, and *Dep\_Children*. Race is identified by the variables *White\_NonHisp*, *Black\_NonHisp*, *Asian*, *Hispanic*, and *Other\_Unkn\_Race*. Additionally, some of these variables are tracked over time in the data set, and are recorded at various years of service. For example, variables *Married\_2* or *Dep\_Children\_6* would identify if an officer is married at the two years of service mark, or if an officer had dependent children at the six years of service mark. For a full list of demographic variables, see Table 2.

Table 2. Demographic Variables Definitions

Demographics	
Independent Variable	Variable Definition
Age	= age of individual
Female	= 1 if female; else = 0.
Married	= 1 if married at time of entry; else = 0.
Married_2	= 1 if married in year 2; else = 0.
Married_6	= 1 if married in year 6; else = 0.
Dep_Children	= 1 if dependent child/children at time of entry; else = 0.
Dep_Children_2	= 1 if dependent child/children in year 2; else = 0.
Dep_Children_6	= 1 if dependent child/children in year 6; else = 0.
White_NonHisp	= 1 if White (race) & non-Hispanic (ethnicity); else = 0.
Black_NonHisp	= 1 if Black (race) & non-Hispanic (ethnicity); else = 0.
Asian	= 1 if Asian; else = 0.
Hispanic	= 1 if Hispanic; else = 0.
Other_Unkn_Race	= 1 if race unknown; else = 0.

In Table 3, professional variables are based on education level, commissioning source, community designation, and cohort year. The variable *Grad\_Educ* is defined as any officer who attained a master's degree, or a professional degree. Commissioning source variables are grouped into the following programs: *Naval\_Academy*, *ROTC*, *OCS\_OTS\_PLC*, *Direct*, *Other\_Commissioning*, and *Unkn\_Commissioning*. Community designations are generated based on the officer's four-digit designator at time of entry, and are categorized by variables *SWO*, *SUB*, *SPEC*, *Aviator*, *RL*, and *STAFF*. Each officer's designator is recorded for each year of the dataset.

Table 3. Professional Background Variables Definitions

<b>Professional Background</b>	
Grad_Educ	= 1 if Master's or Professional Degree; else = 0.
Naval_Academy	= 1 if commissioning source is Naval Academy; else = 0.
ROTC	= 1 if commissioning source is ROTC; else = 0.
OCSOTSPLC	= 1 if commissioning source is OCS, OTS, or PLC; else = 0.
Direct	= 1 if commissioning source is direct commission; else = 0.
Other_Commissioning	= 1 if commissioning source is other; else = 0.
Unkn_Commissioning	= 1 if commissioning source is unknown; else = 0.
Unqual_Line	= 1 if Unqualified Line designation at entry; else = 0.
SWO	= 1 if SWO designation at time of entry; else = 0.
SUB	= 1 if SUB designation at time of entry; else = 0.
SPEC	= 1 if SPEC designation at time of entry; else = 0.
Aviator	= 1 if Aviator designation at time of entry; else = 0.
RL	= 1 if RL designation at time of entry; else = 0.
STAFF	= 1 if STAFF designation at time of entry; else = 0.
Unqual_Line_t	= 1 if Unqualified Line designation at time t, where t=1, 2, 3...10; else = 0.
SWO_t	= 1 if SWO designation at time t, where t=1, 2, 3...10; else = 0.
SUB_t	= 1 if SUB designation at time t, where t=1, 2, 3...10; else = 0.
SPEC_t	= 1 if SPEC designation at time t, where t=1, 2, 3...10; else = 0.
Aviator_t	= 1 if Aviator designation at time t, where t=1, 2, 3...10; else = 0.
RL_t	= 1 if RL designation at time t, where t=1, 2, 3...10; else = 0.
STAFF_t	= 1 if STAFF designation at time t, where t=1, 2, 3...10; else = 0.

Finally, multiple variables are used to capture the completion of a lateral transfer or redesignation. Like for Mundell (2016), the variables in this dataset are determined based on changes in an officer's designation code. However, his research did not first break out designation changes by specific community or year, but rather grouped all transfers at the four-, six-, and ten-year career points. Additionally, Mundell did not include any observations of Unqualified Line transfers within his variables. Mundell's classifications of lateral transfers, therefore, do not fully capture the actual number of observations of lateral transfers within the sample. The lateral transfer variables utilized in this research differ in that they are broken out by specific community (to include Unqualified Line officers), year, and transfer flow, and are then aggregated in order to reflect the full extent of lateral transfers within the dataset. Lateral transfer variables are broken out as such in order to assess the quality of job match within the Navy.

The variable *Lat\_Transfer* identifies the occurrence of a lateral transfer from a given community, at any point in time, to all other communities, within the entire period covered by the data set. These variables are binary and set =1 if a lateral transfer occurs and =0 if no transfer occurs. Variables, *Lat\_t*, are also created to indicate the year of service when the lateral transfer occurred. Variables *Lat\_Transfer\_MSR* and *Lat\_Transfer\_10YOS* capture if any transfer occurred out of a community during the first six years of service, or during ten years of service, respectively. Lateral transfer and redesignation variables are also broken out by community, as follows: *Unqual\_Lat*, *SWO\_Lat*, *SUB\_Lat*, *SPEC\_Lat*, *Aviator\_Lat*, *RL\_Lat*, and *STAFF\_Lat*. The communities listed in these variables are the losing communities, such that these variables show the transfer from said community. Variables are furthermore created to capture the direction of the flow of lateral transfers and redesignations. These variables are annotated by variables with the format *Lat\_t\_losing community\_gaining community*, for customary transfer outcomes. For example, variable *Lat\_1\_SWO\_SUB* depicts a lateral transfer, at year one, from the Surface Warfare community to the Submarine community. Likewise, *Lat\_7\_Aviator\_RL*, measures the flow of Aviation officers who lateral transfer, after seven years of service, to the Restricted Line.

Several variables annotate the flow of a lateral transfer into a community, and are used to differentiate between officers who lateral transfer into a community versus those who enter via normal accessions programs. Variable *Lat\_In\_community\_MSR* denotes officers who lateral transfer into a given community within the six-year MSR period. Similarly, the *Lat\_In\_community* variable covers any transfer into a given community until the ten years of service marker. Variables *Lat\_In\_URL\_MSR* and *Lat\_In\_RL\_STAFF\_MSR* are aggregated from the previous community specific variables, such that URL includes all transfers for SWO, SUB, and SPEC communities. Variables *Lat\_In\_URL* and *Lat\_In\_RL\_STAFF* are aggregated in the same manner, but cover all transfers up until ten years of service. *Lat\_Trans\_In* variable captures any lateral transfer into a community, at any point in time, across all communities, within the entire period covered by the data set.

Lastly, some lateral transfer variables are interacted to identify potential differences in the effects of lateral transfer for men and women. Variable *Fem\_Lat\_In\_MSR* and *Fem\_Lat\_In* denote female officers who have lateral transferred by either the MSR or ten-year career point. These variables are further delineated by community, where *Fem\_Lat\_In\_MSR\_URL* and *Fem\_Lat\_In\_MSR\_RL* identify female officers who have transferred into the URL and RL/Staff community, respectively. The same applies to variables *Fem\_Lat\_In\_10YOS\_URL* and *Fem\_Lat\_In\_10YOS\_RL* for the ten years of service period.

## B. SUMMARY STATISTICS

This section provides a brief overview of previously discussed variables that are included in the dataset. Summary statistics include number of observations, mean, and standard deviations, and are presented according to the model. Again, these statistics apply to officers who entered the Navy between FY 1999 and FY 2003, and who are tracked annually until separation from the Navy, or until 2016.

The dataset contains 16,143 observations. Summary statistics for the sample are displayed in Table 4. For the outcome variables, 74 percent of the initial sample stayed beyond the initial obligation (MSR), 53 percent stayed until ten years, and 42 percent

were promoted to O4 paygrade. FITREP data is only available for 7,414 observations. The mean FITREP individual trait average score for six to ten years of service is 4.23. The mean for the average of officers scores relative to the reporting senior's cumulative average is 1.01, indicating that the majority of officers rate just slightly above the reporting senior's average. This mean remains relatively unchanged for the ensuing retention and promotion samples of officers.

In Table 4, the average age at commissioning for this dataset is 24.8 years of age. The sample is roughly 18 percent female and 82 percent male, which is representative of the Navy's typical gender distribution. Additionally, of those in the total sample, 18 percent are married at the time of commissioning. Variables *White\_NonHisp* make up 75.3 percent, *Black\_NonHisp* 7.1 percent, *Asian* 5.0 percent, *Hispanic* 9.4 percent, and *Other\_Unkn\_Race* make up the remaining 3.2 percent. *Dep\_Children* shows that 22 percent of officers have dependent children at time of entry. At time of commissioning, 37.1 percent of the sample holds a graduate degree. Commissioning source variables reflect 24 percent access via the *Naval\_Academy*, 26.5 percent via *ROTC*, 32.4 percent via *OCS OTS PLC*, 7.9 percent via *Direct* commission, and 7.1 percent via *Other\_Commissioning*. About 2.1 percent of the sample has an unknown commissioning source (*Unkn\_Commissioning*). At time of entry, the variable *Unqual\_Line* community accounts for 12.5 percent of the total sample, and consist of officers assigned to the General Unrestricted Line, or Fleet Support Officer, community. This designation was dissolved within the Navy, which is also reflected in the dataset. URL communities of SWO, SUB, SPEC, and Aviator account for 23.3 percent, 9.7 percent, 1.7 percent, and 28.5 percent, respectively. The RL community is 5.9 percent, and Staff is 18.4 percent of the overall sample.

Table 4. Summary Statistics of Total Sample

<b>VARIABLES</b>	<b>(1) N</b>	<b>(2) Mean</b>	<b>(3) Std. Dev.</b>
MSR_Retention	16,143	0.74	0.44
Ten_year_Retention	16,143	0.53	0.50
Promoted_O4	16,143	0.42	0.49
TraitAvg_6to10YOS	7,414	4.23	0.30
AboveAvgRS_6to10YOS	7,414	0.64	0.48
Age	16,096	24.84	3.49
Female	16,143	0.18	0.39
Married	16,143	0.18	0.39
Dep_Children	16,143	0.22	0.41
White_NonHisp	16,143	0.75	0.43
Black_NonHisp	16,143	0.07	0.26
Asian	16,143	0.05	0.22
Hispanic	16,143	0.09	0.29
Other_Unkn_Race	16,143	0.03	0.18
Grad_Educ	16,143	0.37	0.48
Naval_Academy	16,143	0.24	0.43
ROTC	16,143	0.27	0.44
OCS_OTS_PLC	16,143	0.32	0.47
Direct	16,143	0.08	0.27
Other_Commissioning	16,143	0.07	0.26
Unkn_Commissioning	16,143	0.02	0.14
Unqual_Line	16,143	0.13	0.33
SWO	16,143	0.23	0.42
SUB	16,143	0.10	0.30
SPEC	16,143	0.02	0.13
Aviator	16,143	0.28	0.45
RL	16,143	0.06	0.24
STAFF	16,143	0.18	0.39

The MSR retention sample contains 11,938 officers who stayed for at least six years. Since this sample includes only those officers who completed their MSR, the summary statistics are somewhat different than those in the previous sample, and are reflected in Table 5.

In Table 5, the percentage of officers who reach the ten-year point increased to 72 percent, and promoted to O4 also increased to 56 percent. Individual trait average is 4.24, with 64.8 percent rating above reporting senior's cumulative average. Average age for this dataset is 25 years. Gender distribution within the dataset is 14.6 percent female and 85.4 percent male, showing that fewer females realize MSR retention than males. Variable *Married\_2* accounts for 38 percent, showing an overall increase in marriage rates within the sample. Variable *Dep\_Children\_2* is observed for the total MSR retention sample, representing 26 percent. Race distribution remains relatively unchanged. Graduate education increased from 37.1 to 47.8 percent of the sample. Commissioning sources also reflect only slight changes in the sample, as shown in Table 5. URL communities also remained relatively unchanged, with the exception of variable *Aviator\_2*, which increased from 28.5 percent to 34.7 percent. Additionally, variable *Unqual\_Line\_2* community decreased from 12.5 percent to 4.4 percent, which is expected as this designation was dissolved, and officers are either absorbed by other communities or separate.

Table 5. Summary Statistics for MSR Retention Sample

VARIABLES	(1) N	(2) Mean	(3) Std. Dev.
Ten_year_Retention	11,938	0.72	0.45
Promoted_O4	11,938	0.56	0.50
TraitAvg_6to10YOS	7,086	4.24	0.30
AboveAvgRS_6to10YOS	7,086	0.65	0.48
Age	11,910	25.06	3.63
Female	11,938	0.15	0.35
Married_2	11,938	0.38	0.49
Dep_Children_2	11,938	0.26	0.44
White_NonHisp	11,938	0.75	0.43
Black_NonHisp	11,938	0.07	0.26
Asian	11,938	0.05	0.21
Hispanic	11,938	0.10	0.29
Other_Unkn_Race	11,938	0.03	0.17
Grad_Educ	11,938	0.48	0.50
Naval_Academy	11,938	0.25	0.43
ROTC	11,938	0.24	0.43
OCS OTS PLC	11,938	0.34	0.47
Direct	11,938	0.07	0.26
Other_Commissioning	11,938	0.08	0.27
Unkn_Commissioning	11,938	0.02	0.14
Unqual_Line_2	11,938	0.04	0.20
SWO_2	11,938	0.23	0.42
SUB_2	11,938	0.10	0.30
SPEC_2	11,938	0.02	0.15
Aviator_2	11,938	0.35	0.48
RL_2	11,938	0.07	0.26
STAFF_2	11,938	0.18	0.39

The ten-year retention sample has 8,563 observations, and captures only those officers who complete at least ten years of service. Table 6 provides summary statistics for this sample.

In Table 6, officers promoted to O4 significantly increased, from 56 percent, to 77 percent of this sample. The mean FITREP individual trait average is 4.25. Additionally, females represent 13.3 percent and males represent 86.7 percent. Demographic variables *Married\_6* and *Dep\_Children\_6* have increased significantly, from 38 to 67 percent and 26 to 42 percent, respectively. This shows the propensity for officers to acquire dependent family members by this point in their career. Graduate education continues to grow within this sample, increasing from 47.8 to 61.6 percent. With regard to community distribution, variables *Unqual\_Line\_6* is no longer represented in the sample and *SWO\_6* decreased from 22.3 percent to 16 percent. Furthermore, variables *RL\_6* increased from 7 percent to 14 percent within ten-year retention sample. *STAFF\_6* variable increased from 18 to 21 percent. These increases in the RL/Staff communities give credence to the increase of lateral transfers throughout an officers' Navy career progression. All other variables remained relatively constant.

Table 6. Summary Statistics for Ten-Year Retention Sample

<b>VARIABLES</b>	<b>(1) N</b>	<b>(2) Mean</b>	<b>(3) Std. Dev.</b>
Promoted_O4	8,563	0.77	0.42
Age	8,542	25.62	3.85
TraitAvg_6to10YOS	6,324	4.25	0.29
AboveAvgRS_6to10YOS	6,324	0.66	0.47
Female	8,563	0.13	0.34
Married_6	8,563	0.67	0.47
Dep_Children_6	8,563	0.42	0.49
White_NonHisp	8,563	0.75	0.43
Black_NonHisp	8,563	0.08	0.27
Asian	8,563	0.05	0.22
Hispanic	8,563	0.09	0.28
Other_Unkn_Race	8,563	0.03	0.18
Grad_Educ	8,563	0.62	0.49
Naval_Academy	8,563	0.22	0.41
ROTC	8,563	0.22	0.41
OCS OTS PLC	8,563	0.36	0.48
Direct	8,563	0.08	0.28
Other_Commissioning	8,563	0.09	0.28
Unkn_Commissioning	8,563	0.02	0.15
SWO_6	8,563	0.16	0.37
SUB_6	8,563	0.07	0.26
SPEC_6	8,563	0.03	0.16
Aviator_6	8,563	0.36	0.48
RL_6	8,563	0.14	0.35
STAFF_6	8,563	0.22	0.41

Similar to the other models, the O4 promotion sample reflects only those officers who were selected for, and promoted to, the paygrade of O4. This sample includes 6,776 observations. Summary statistics are presented in Table 7.

In Table 7, the mean FITREP individual trait average is 4.27. Akin to the previous model, females accounts for roughly 13 percent of the sample. In comparison to the overall sample however, females decreased from 18 percent, potentially indicating less likelihood of female retention and promotion. The percentages of those officers who are married with dependent children continue to grow, as outlined in Table 7. Race variables continue to remain relatively constant within the sample. Graduate education shows a notable increase from the total sample, increasing from 37.1 to 67.4 percent. This increase reflects the Navy position that encourages higher education as an officer become more senior, which is one of the consideration criteria on promotion boards. Regarding commissioning source, variable *Naval\_Academy* maintained similar percentages throughout the models. Interestingly, however, changes in variables *ROTC* and *OCS\_OTS\_PLC* were more pronounced, in comparison to the total sample. *ROTC* decreased from 26.5 percent to 21.3 percent, while *OCS\_OTS\_PLC* increased from 32.4 percent to 37.2 percent in the promoted to O4 sample.

Table 7. Summary Statistics for Promoted O4 Sample

<b>VARIABLES</b>	<b>(1) N</b>	<b>(2) Mean</b>	<b>(3) Std. Dev.</b>
TraitAvg_6to10YOS	5,362	4.27	0.28
AboveAvgRS_6to10YOS	5,362	0.69	0.46
Age	6,776	0.13	0.34
Female	6,776	0.87	0.34
Married_6	6,776	0.43	0.50
Dep_Children_6	6,776	0.75	0.43
White_NonHisp	6,776	0.08	0.27
Black_NonHisp	6,776	0.05	0.22
Asian	6,776	0.09	0.29
Hispanic	6,776	0.03	0.18
Other_Unkn_Race	6,776	0.67	0.47
Grad_Educ	6,776	0.54	0.50
Naval_Academy	6,776	0.21	0.41
ROTC	6,776	0.37	0.48
OCS OTS PLC	6,776	0.09	0.29
Direct	6,776	0.09	0.29
Other_Commissioning	6,776	0.02	0.13
Unkn_Commissioning	6,776	0.00	0.00
SWO_6	6,776	0.16	0.37
SUB_6	6,776	0.07	0.26
SPEC_6	6,776	0.03	0.17
Aviator_6	6,776	0.33	0.47
RL_6	6,776	0.15	0.36
STAFF_6	6,776	0.25	0.43

The largest difference between the total sample and the O4 promotion sample is in the distribution of officers by community. *Unqual\_Line\_6* dropped out in the samples for the stayers depicting the absorption of these officers into other communities. In the sample of six year stayers, *SWO\_6* decreased substantially, from 23.3 to 16.2 percent, *SUB\_6* decreased from 9.8 to 7.1 percent, whereas *Aviator\_6* sees an increase from 28.5 to 33.4 percent. However, in the ten-year retention sample *Aviator\_6* decreases from 36.4 to 33.4 percent. This is not unexpected, due to the career progression and service

requirements specific to the aviation community. Variable *SPEC\_6* slightly increases from 1.7 to 2.9 percent. The greatest growth is within the *RL\_6* and *STAFF\_6* community variables, which increase from 5.9 and 18.4 percent to 15.2 and 24.5 percent, respectively. Decreases within the *SWO* and *SUB* communities, and increases within the *RL/Staff*, reveal the standard lateral transfer process, where *URL* communities act as the primary feeders to the *RL/Staff* communities.

### C. COMPARISON OF GROUP MEANS

Table 8 shows t-tests for differences in the three career outcomes between officers who completed a lateral transfer and officers who did not complete a lateral transfer. All three career outcomes are significantly higher for officers who lateral transfer than for other officers. The *MSR* retention rate is 79.7 percent for those who completed a lateral transfer versus 62.5 percent for those who did not lateral transfer.

Table 8. T-Tests of Differences in Retention and Promotion for Lateral Transfer and Non-lateral Transfer Officers

Variable	Lateral Transfer	Non-Lateral Transfer	T-test Statistic
MSR_Retention (N=12,821)	0.797	0.625	18.65***
Ten_year_Retention (N=16,143)	0.564	0.521	4.62***
Promoted_O4 (N=8,563)	0.833	0.752	7.70***

\*\*\*significant at 1 percent; \*\*significant at 5 percent, \*significant at 10 percent

Similarly, the ten-year retention rate is 56.4 percent for officers who lateral transfer versus only 52.1 percent for officers who do not lateral transfer. Finally, the O4 promotion rate is 83.3 percent for lateral transfers versus 75.2 percent for non-laterals. Across all models, these differences are statistically significant at the 1 percent level.

## D. DESCRIPTIVE STATISTICS

This section provides a more detailed description of the dataset, as it pertains to various lateral transfer variables. Lateral transfer and redesignation occurrences are identified and tracked over time, to show the flow of transfers, by specific community.

There are 3,763 lateral transfers up to ten years of service. That is, 23 percent of all officers in the full sample made a lateral transfer at some point during their careers. These observations differ significantly from the 1,631 observations of lateral transfer utilized in Mundell's research over the same time period. This difference in number of observations also attributes to the differing T-test retention and promotion averages shown in Table 8. Mundell's research states that, of officers who lateral transfer, 99.6 percent retain past MSR, 97.5 percent retain past ten years of service, and 86.7 percent promote to O4.

Table 9 (Lat<sub>t</sub>) shows the percent of transfers that occur during each year of service, where t denotes the year in which the lateral transfer occurs. Of the 3,763 transfers, Table 9 shows that 78 percent occur during years of service 1-3 and that 93 percent occur prior to the MSR Retention point (year 6).

Table 9. Distribution of Lateral Transfers by Year of Service (t)

Variable	Observations	Mean	Std. Dev.
Lat_1	3,763	0.18	0.38
Lat_2	3,763	0.39	0.49
Lat_3	3,763	0.23	0.42
Lat_4	3,763	0.10	0.30
Lat_5	3,763	0.05	0.22
Lat_6	3,763	0.04	0.20
Lat_7	3,763	0.03	0.17
Lat_8	3,763	0.03	0.16
Lat_9	3,763	0.02	0.13
Lat_10	3,763	0.02	0.14

Of particular note is the number of officers who complete multiple lateral transfers or redesignations. The variable *Lat\_Transfer\_Multiple* captures this sample, which accounts for less than two percent of the overall dataset, but roughly eight percent of officers who lateral transfer. Of those eight percent of officers who complete multiple lateral transfers or redesignations, the majority complete only two transfers within their career, with less than one percent completing three transfers. Officers who complete multiple lateral transfers are not explored in this study.

Figure 6 displays the percentage of transfers from the losing communities, where  $t$  indicates the year when the loss occurs. In the first several years of service, the unqualified line community (*Unqual\_Line*) has the highest percentage of transfers. As previously mentioned, this designation was dissolved, which suggests these designator changes involved redesignation rather than lateral transfer, as outlined in MILPERSMAN 1212-010. The SWO community also has a large percentage of transfers during the MSR period. Aviator and SUB communities reflect a similar pattern as the SWO community, although their MSR time period is longer due to longer training pipelines. RL/Staff communities show few transfers in Figure 6, as they are primarily gaining communities within the lateral transfer process. Raw data on individual observations in the data set are further presented in Table 10.

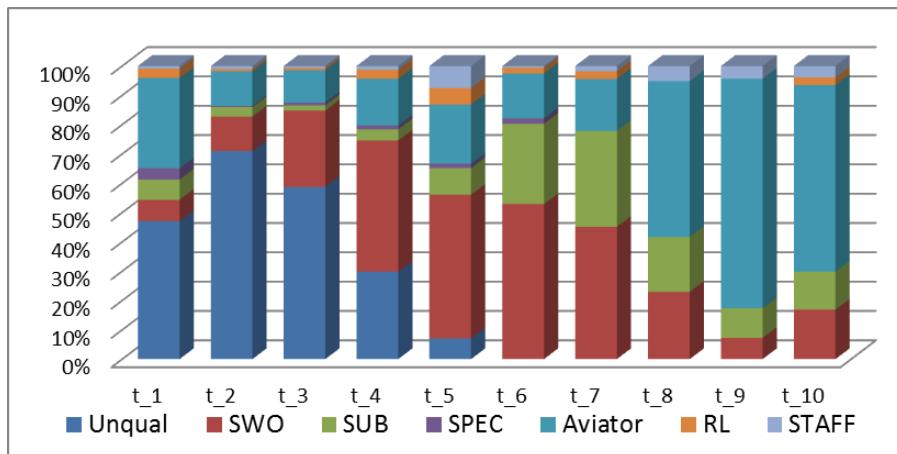


Figure 6. Lateral Transfers and Redesignations from Losing Community Identified

Table 10. Lateral Transfer Flow Data, from Losing to Gaining Community

Lateral Transfer Flow	t_1	t_2	t_3	t_4	t_5	t_6	t_7	t_8	t_9	t_10
Unqual_SWO	71	402	160	20	1	-	-	-	-	-
Unqual_SUB	11	18	179	53	3	-	-	-	-	-
Unqual_SPEC	5	39	9	11	5	-	-	-	-	-
Unqual_Aviator	134	497	104	25	3	-	-	-	-	-
Unqual_RL	64	56	61	5	-	-	-	-	-	-
Unqual_STAFF	26	20	4	2	2	-	-	-	-	-
<b>Total Unqual Transfers</b>	<b>311</b>	<b>1,032</b>	<b>517</b>	<b>116</b>	<b>14</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
SWO_SUB	14	4	9	5	-	-	-	-	-	-
SWO_SPEC	2	26	17	16	7	-	-	-	-	-
SWO_Aviator	12	21	14	9	2	2	-	-	-	-
SWO_RL	14	108	153	120	68	69	39	20	5	12
SWO_STAFF	6	11	36	24	20	12	12	2	-	1
<b>Total SWO Transfers</b>	<b>48</b>	<b>170</b>	<b>229</b>	<b>174</b>	<b>97</b>	<b>83</b>	<b>51</b>	<b>22</b>	<b>5</b>	<b>13</b>
SUB_SWO	17	9	4	1	-	-	-	-	-	-
SUB_SPEC	2	-	-	-	1	-	-	-	-	-
SUB_Aviator	6	5	1	-	-	1	-	-	-	-
SUB_RL	11	15	8	8	14	37	28	13	6	10
SUB_STAFF	10	18	3	6	3	5	9	5	1	-
<b>Total SUB Transfers</b>	<b>46</b>	<b>47</b>	<b>16</b>	<b>15</b>	<b>18</b>	<b>43</b>	<b>37</b>	<b>18</b>	<b>7</b>	<b>10</b>
SPEC_SWO	10	2	5	3	-	-	-	-	-	-
SPEC_SUB	3	-	-	-	-	-	-	-	-	-
SPEC_Aviator	5	-	2	-	-	-	-	-	-	-
SPEC_RL	3	2	1	1	3	1	-	-	-	-
SPEC_STAFF	4	2	-	1	-	2	-	-	-	-
<b>Total SPEC Transfers</b>	<b>25</b>	<b>6</b>	<b>8</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
Aviator_SWO	111	37	4	3	2	-	1	-	-	-
Aviator_SUB	13	1	3	-	-	-	-	-	-	-
Aviator_SPEC	1	2	-	-	-	-	-	-	-	-
Aviator_RL	42	62	52	44	29	20	13	32	24	41
Aviator_STAFF	37	70	38	15	9	4	6	19	30	8
<b>Total Aviator Transfers</b>	<b>204</b>	<b>172</b>	<b>97</b>	<b>62</b>	<b>40</b>	<b>24</b>	<b>20</b>	<b>51</b>	<b>54</b>	<b>49</b>
RL_SWO	4	1	3	2	1	1	2	-	-	-
RL_SUB	4	2	-	1	1	-	-	-	-	-
RL_SPEC	-	1	-	-	-	-	-	-	-	-
RL_Aviator	11	5	-	5	-	-	-	-	-	1
RL_STAFF	2	2	4	4	9	2	1	-	-	1
<b>Total RL Transfers</b>	<b>21</b>	<b>11</b>	<b>7</b>	<b>12</b>	<b>11</b>	<b>3</b>	<b>3</b>	<b>-</b>	<b>-</b>	<b>2</b>
STAFF_SWO	1	6	1	1	-	-	-	-	-	-
STAFF_SUB	1	-	-	-	-	-	-	-	-	-
STAFF_SPEC	-	3	-	-	-	-	-	-	-	-
STAFF_Aviator	2	6	1	1	2	-	-	-	-	-
STAFF_RL	2	-	4	3	13	1	2	5	3	3
<b>Total STAFF Transfers</b>	<b>6</b>	<b>15</b>	<b>6</b>	<b>5</b>	<b>15</b>	<b>1</b>	<b>2</b>	<b>5</b>	<b>3</b>	<b>3</b>
<b>Total Transfers</b>	<b>661</b>	<b>1,453</b>	<b>880</b>	<b>389</b>	<b>198</b>	<b>157</b>	<b>113</b>	<b>96</b>	<b>69</b>	<b>77</b>

It is also important to note which communities complete the most transfers. Figure 7 shows the percentage of all officers who lateral transfer or redesignate by community during the dataset observation period. Not surprisingly, again the URL communities have the highest percentage of transfers.

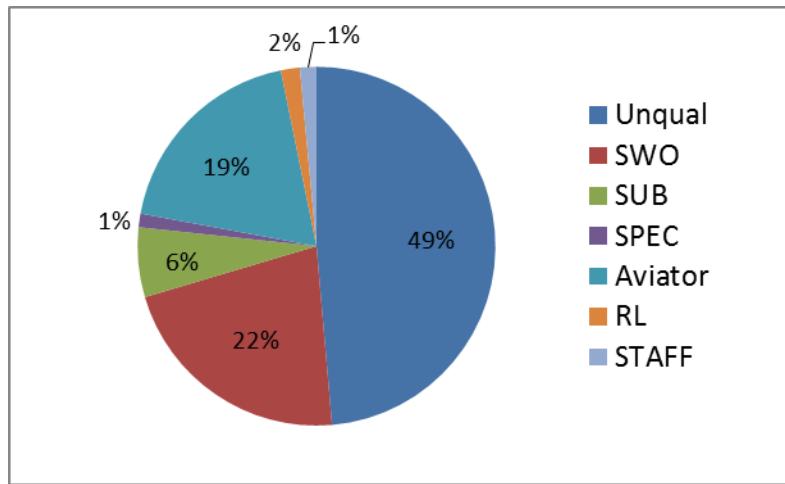


Figure 7. Average Percentage of Lateral Transfers and Redesignations by Losing Community

Since lateral transfer and redesignation is a two-part process, the gaining community is also of importance. Figure 8 displays the flow of officers from the losing community (identified in the title at the top of the graph), to the gaining communities (identified alongside the graph), by percentage. Figure 8 shows that the highest percentage of transfers of the unqualified line community (in the top graph) is primarily transferring to the SWO, SUB, and Aviator communities, with some absorption into the RL community. There are several transfers from the SWO community into other URL communities such as SUB, SPEC, and Aviator; however, the bulk of transfers by SWOs are to the RL/Staff communities. This is similarly the case for SUB and Aviator, where the gaining communities are primarily RL or Staff. The majority of SPEC transfers are to the SWO, RL, or STAFF communities, with quite a few to the Aviator community. RL transfers, in the early years of service, are overwhelmingly to the URL communities and then to the STAFF community in later years. STAFF officers show the same pattern, with the exception of transferring to the RL community in later years.



Figure 8. Lateral Transfer and Redesignation Gains by Community and the Source of the Gains

Table 11 reflects actual data observations of these transfer flows, showing officer gains (transfers into a community) and losses (transfers out of a community), per community for those officers who conducted a lateral transfer at  $t$  years of service. Again, these figures reinforce the relationship between URL and RL or STAFF communities as the primary supplying and gaining communities, respectively, and particularly as years of service progress.

Table 11. Community Gains and Losses

		t_1	t_2	t_3	t_4	t_5	t_6	t_7	t_8	t_9	t_10
<b>Unqual</b>	Gains	-	-	-	-	-	-	-	-	-	-
	Losses	311	1,032	517	116	14	-	-	-	-	-
	Net	(311)	(1,032)	(517)	(116)	(14)	-	-	-	-	-
<b>SWO</b>	Gains	214	457	177	30	4	1	3	-	-	-
	Losses	48	170	229	174	97	83	51	22	5	13
	Net	166	287	(52)	(144)	(93)	(82)	(48)	(22)	(5)	(13)
<b>SUB</b>	Gains	46	25	191	59	4	-	-	-	-	-
	Losses	46	47	16	15	18	43	37	18	7	10
	Net	-	(22)	175	44	(14)	(43)	(37)	(18)	(7)	(10)
<b>SPEC</b>	Gains	10	71	26	27	13	-	-	-	-	-
	Losses	25	6	8	5	3	3	-	-	-	-
	Net	(15)	65	18	22	10	(3)	-	-	-	-
<b>Aviator</b>	Gains	170	534	122	40	7	3	-	-	-	1
	Losses	204	172	97	62	40	24	20	51	54	49
	Net	(34)	362	25	(22)	(33)	(21)	(20)	(51)	(54)	(48)
<b>RL</b>	Gains	136	243	279	181	127	128	82	70	38	66
	Losses	21	11	7	12	11	3	3	-	-	2
	Net	115	232	272	169	116	125	79	70	38	64
<b>STAFF</b>	Gains	85	123	85	52	43	25	28	26	31	10
	Losses	6	15	6	5	15	1	2	5	3	3
	Net	79	108	79	47	28	24	26	21	28	7

The aggregated *Lat\_In\_URL\_MSR* and *Lat\_In\_RL\_STAFF\_MSR* variables, account for 60.0 percent, and 40.0 percent respectively, of officers who conduct a lateral transfer within the MSR sample. Aggregated *Lat\_In\_URL* and *Lat\_In\_RL\_STAFF* variables, account for 55.4 percent, and 44.6 percent respectively, of officers who conduct a lateral transfer by ten years of service sample. Community specific percentages of transfers into a community, by both MSR and ten years of service retention, are presented in Figure 9.

Lastly, female officers who lateral transfer up to the MSR and ten-year retention markers comprise 3.4 percent and 3.6 percent of the sample, respectively. Within the MSR sample, females make up 1.3 percent of URL transfers, and 1.8 percent of RL/Staff transfers. Within the ten-year retention sample, females account for 1.8 of URL transfers and 2.1 of the RL/Staff transfers.

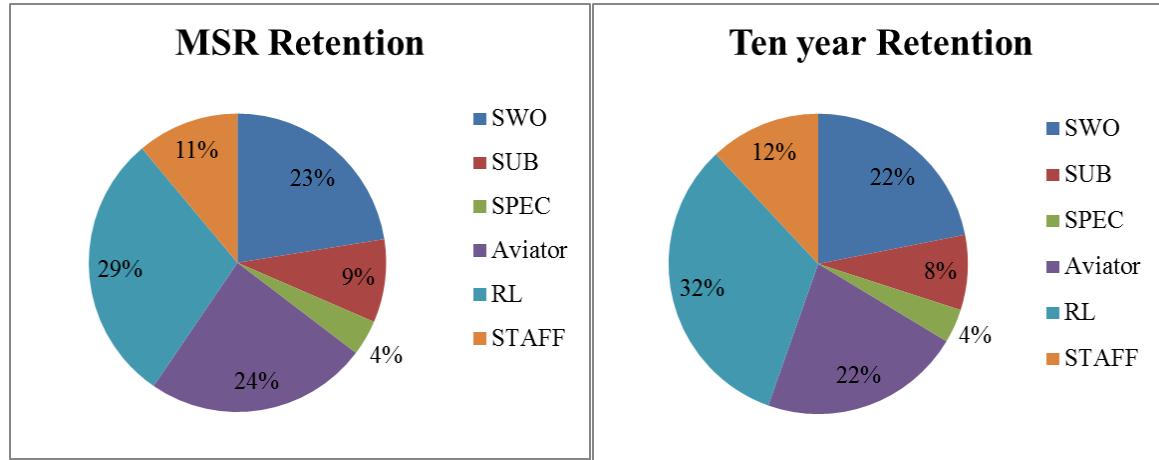


Figure 9. Lateral Transfers and Redesignations by Gaining Community, at MSR and Ten-Year Retention Sample

## E. SUMMARY

Statistical analyses of the data show that it is representative of the officer corps composition, in addition to being consistent with Navy policies regarding the lateral transfer process. Means of the various samples fluctuate accordingly with each career model outcome, revealing several trends within the dataset. Analysis of demographic variables show that female retention decreases from 18 percent of the total sample at time of entry, to only 13 percent retaining until at least ten years of service. The percentages of officers who are married more than tripled from time of entry to ten years of service, increasing from roughly 18 percent to 67 percent. Officers with dependent children also doubled approximately in percentage of the sample. Race composition remained fairly steady throughout the samples, showing uniform representation at the various career outcomes. The professional background variable of graduate education increased in

percentage across retention and promotion model outcomes. These increases reflect the emphasis on continuing education within the officer corps.

Trends pertaining to the lateral transfer process were similarly consistent with organizational practices. The data also shows that transfers occur primarily at or around the MSR timeframe, across all communities. Transfers are highest early on in officer's career tracks, and tend to reduce as years of service progress, suggesting that a more appropriate job match has occurred. The data also shows the URL communities have a high percentage of transfers to the RL/Staff communities. This flow accurately reflects Navy practices of the RL/Staff communities, which rely on the lateral transfer process as a primary source of accessions. Comparative statistical analysis confirmed that samples of officers who complete a lateral transfer, versus those officers who do not transfer, are statistically different. Additionally, the data shows high percentages of laterally transferred officers who retain until at least the MSR and ten years of service markers, in addition to promoting to O4. This suggests that the lateral transfer process is an effective retention tool.

## **V. MODELS AND RESULTS**

This section discusses the methodology and multivariate models used to analyze the lateral transfer data. Although the summary and descriptive statistics presented in Chapter IV provide a profile of the data, it is difficult to determine the effects of a given explanatory variable, independent of other factors that also influence the career outcome. Therefore, multivariate statistical analysis is applied to the data, to hold these other factors constant, and to isolate the direct effect of lateral transfer and redesignation. Results from this multivariate analysis are presented in this chapter.

### **A. METHODOLOGY**

Multivariate statistical analysis is utilized to estimate the effects of independent or explanatory variables, on dependent, or response variables. Utilizing the statistical software program Stata, Linear Probability Models (LPM) estimate models with binary and continuous dependent (outcome) variables. The dependent variables that are binary are MSR retention, ten-year retention, and promotion to O4. Additionally, FITREP models utilize dependent variables consisting of various individual and reporting senior FITREP scores. The key explanatory variable is the occurrence of lateral transfer and redesignation; however the variable definition varies depending on the model. LPMs are utilized to estimate the coefficients in the retention and promotion models, due to the binary nature of the dependent variables; FITREP models utilize Ordinary Least Squares, as the outcome variables are continuous.

### **B. MODELS**

When the dependent variables are binary, the estimated coefficients from LPM models “measure[s] the change in the probability” of the outcome for each unit change in the explanatory variable (Wooldridge, 2013, p. 249). These are called the partial or marginal effects of the independent variables. Additionally, due to the use of interacted variables, some beta coefficients must be combined in order to assess the effects of a given interacted variable.

When using binary explanatory variables, the effect of each variable is measured as compared to a reference group. Therefore, unless otherwise specified, for the binary explanatory variables in the models, the control group consists of White non-Hispanic male officers, who are unmarried and without dependent children, and who have graduated from the Naval Academy. Models are applied to the full sample of officers, and then further delineated into sub-samples of (1) URL, and (2) RL/Staff officers.

The specifications of the models here differ from those of Mundell (2016). Mundell's analysis uses probit models that contain fixed effects for officer communities, and cohort groups. Using fixed effects for a specific community is problematic, however, in that it becomes difficult to interpret the results of lateral transfers because it is not known whether the transfer is to a community or from a community. Therefore, the following models drop the fixed effects and examine only lateral transfers into a community. Additionally, the LPMs here attempt to assess job match by analyzing lateral transfers by specific community. Lastly, this research differs from Mundell in that FITREP data is applied to assess officer job match.

## **1. Retention Models**

As stated, the dependent variables for retention models are (1) *MSR\_Retention*, and (2) *Ten\_year\_Retention*. These models test the effects of lateral transfer, and other explanatory variables, on the likelihood of officer retention.

### **a. *MSR Retention Model for the Full Sample***

The first model in equation (1) estimates the effects of lateral transfer, demographic, and professional variables on an officer's probability of retaining beyond MSR. Chapter IV provides definitions for the demographic and professional background variables utilized in this model. The key explanatory variable is *Lat\_Trans\_In\_MSR* which captures any lateral transfer into any gaining community prior to MSR (six years of service). Aviators are deleted from the analysis sample for this model since, due to their lengthy training pipeline, MSR obligations for aviators exceed the six-year cut-off for measuring *MSR\_Retention*.

$$(1) \quad \Pr (MSR\_Retention = 1|X) = \beta_0 + \beta_1 Lat\_Trans\_In\_MSR + \beta_2 Fem\_Lat\_In\_MSR + \beta_3 Demographics + \beta_4 Professional Background + \mu$$

The most accurate approach to assess job match would be to compare officers' relative outcomes (in terms of retention and promotion) pre-lateral transfer versus post-lateral transfer (a differences-in-differences approach). Unfortunately, the necessary data to make this comparison was not fully available in the current data set. Hence, the approach adopted here is to compare relative career outcomes post-lateral transfer.

In theory, the effect of a lateral transfer on job match (as measured by MSR retention and other career outcomes) is ambiguous. On the one hand, a lateral transfer into a gaining community may have a positive effect on MSR retention. Positive effects would be expected because any transfer occurring before MSR, regardless of the cause, is likely due to realignments within communities, in order to find a better match at the onset of an officer's career. This would include such instances as attrition from training/schools, medical disqualifiers, or acceptance to special programs. On the other hand, officers who lateral transfer into a community may not experience different career outcomes from officers who entered the community via other means, especially considering the latter have had more time to acclimate to the given community and already have experience working in jobs in the community.

Table 12 displays the MSR retention model results. The sample size for this model is only 12,793 observations as 3,350 aviators were omitted from the sample. Unless otherwise stated, all results discussed are statistically significant at the .01 significance level.

Table 12. MSR Retention Model Results on Full Sample

VARIABLES	(1) MSR_Retention
Lat_Trans_In_MSR	0.1683*** (0.0105)
Fem_Lat_In_MSR	0.0830*** (0.0235)
Age	0.0191*** (0.0014)
Female	-0.1370*** (0.0114)
Married_2	0.0934*** (0.0091)
Dep_Children_2	0.0761*** (0.0102)
Black_NonHisp	0.0431*** (0.0147)
Asian	0.0072 (0.0172)
Hispanic	0.0148 (0.0134)
Other_Unkn_Race	-0.0027 (0.0226)
ROTC	-0.1106*** (0.0118)
OCS_OTS_PLC	-0.0563*** (0.0128)
Direct	-0.0697*** (0.0180)
Other_Commissioning	-0.1590*** (0.0213)
Unkn_Commissioning	-0.2599*** (0.0348)
Constant	0.1863*** (0.0339)
Observations	12,793
R-squared	0.1007

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Note: aviators are omitted from sample due to MSR period

*b. MSR Retention Model by Communities*

The same MSR retention model shown in equation (1) is also applied to sub-samples based on specific communities. These models allow for comparison of officers who lateral transfer into a given community, as opposed to those officers who enter directly via other accession programs. Communities are organized into two groups: (1) URL, which includes SWO, SUB, and SPEC, and (2) RL/Staff. Aviators are again excluded due to the short MSR period. Constructing the sample of officers who originate in specific URL communities is challenging because officers may transition within the different URL communities. The sample is adjusted so as to avoid double counting such occurrences. Results from these regressions are displayed in Table 13.

The results in column (1) show that male officers who lateral transfer into URL communities are associated with a 15.0 percentage point higher MSR retention rate as compared to male officers who entered the URL via normal accession programs. Similarly, the results in column (2) find that male officers who transfer into RL or Staff are associated with a 10.9 percentage point higher MSR retention rate than those males who accessed into the RL or Staff communities directly. Females who lateral transfer into the RL/Staff communities are 13.0 percentage points more likely to stay past MSR than their male non-transfer counterparts.

The higher MSR retention rates of officers who lateral transfer into a given community suggests that implementing a more appropriate job match increases retention during the first six years of service. By aligning officers with a more suitable community at the onset of their careers, the Navy stands to benefit from the gains associated with retaining these individuals past their obligated service and the resulting increase in years of commissioned service.

Overall, female URL officers have a lower retention rate, by 18.4 percentage points, compared to their male counterparts in URL communities. This coefficient reflects the systematic challenges of retaining female officers within the URL. Overall within the RL/Staff communities, females are 3.2 percentage points more likely to stay beyond MSR as compared to males. Additionally, females who lateral transfer in the

URL and RL/Staff communities are 18.4 and 22.8 percentage points, respectfully, more likely to stay than females who do not enter via lateral transfer. These results suggest that females within the RL or Staff community have a higher propensity, in comparison to their male counterparts, to remain in the Navy past MSR than do females in the URL community. Plus, regardless of community, lateral transfer has a substantial retention effect for females in comparison to other females who do not transfer.

Turning to the demographic variables, within the URL community, officers who are married, who have dependent children, or who are Black non-Hispanic, are more likely to retain past MSR than URL officers who are unmarried, have no dependent children, or are White. The same holds true for RL/Staff officers. From a professional standpoint, officers from ROTC and direct commissioning sources continue to have a lower probability of MSR retention compared to Naval Academy graduates, regardless of URL or RL/Staff community designation.

Table 13. MSR Retention Model Results by Communities

VARIABLES	(1) MSR_Retention URL	(2) MSR_Retention RL_STAFF
Lat_In_community_MSR	0.1502*** (0.0550)	0.1090*** (0.0162)
Fem_Lat_In_MSR_community	-0.1884 (0.2091)	0.1297*** (0.0316)
Age	0.0171*** (0.0028)	0.0204*** (0.0017)
Female	-0.1844*** (0.0161)	-0.0981*** (0.0155)
Married_2	0.0964*** (0.0138)	0.0377*** (0.0129)
Dep_Children_2	0.0526*** (0.0152)	0.0569*** (0.0139)
Black_NonHisp	0.0515** (0.0218)	0.0620*** (0.0198)
Asian	-0.0244 (0.0275)	0.0445* (0.0230)
Hispanic	-0.0169 (0.0215)	0.0242 (0.0225)
Other_Unkn_Race	0.0128 (0.0361)	0.0041 (0.0329)
ROTC	-0.0772*** (0.0161)	-0.1027*** (0.0242)
OCS_OTS_PLC	-0.0050 (0.0190)	0.0068 (0.0231)
Direct	-0.2753*** (0.0552)	-0.0541** (0.0260)
Other_Commissioning	-0.0308 (0.0562)	0.0144 (0.0310)
Unkn_Commissioning	0.0136 (0.0794)	-0.0589 (0.0479)
Constant	0.2822*** (0.0633)	0.1474*** (0.0449)
Observations	5,760	5,357
R-squared	0.0828	0.0980

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*c. Ten-year Retention Model for the Full Sample*

Equation (2) denotes the second model of the probability of an officer's retention beyond ten years of service. This model contains observations for Aviators, since the 10-year period exceeds their obligation and allows them to make voluntary stay-leave decisions.

$$(2) \quad \Pr(Ten\_year\_Retention = 1|X) = \beta_0 + \beta_1 Lat\_Trans\_In + \beta_2 Fem\_Lat\_In + \beta_3 Demographics + \beta_4 Professional Background + \mu$$

Table 14 shows the results of the ten-year retention model for the full sample, which has 16,096 observations. Results show that the effect of lateral transfer for male officers is statistically insignificant. Females who lateral transfer, however, are more likely to retain by 5.9 percentage points, than males who do not transfer. This nearly offsets the 5.9 percentage point lower ten-year retention rate of females, as compared to males. Furthermore, female lateral transfers are 11.8 percentage points more likely to retain than other females.

Married officers are 26.8 percentage points more likely to retain beyond ten years of service. Officers with dependent children have higher ten-year retention (by 8.3 points) than officers without dependent children. All races have insignificant effects, with the exception of Hispanics, who have lower ten-year retention (by 2.6 points), as compared to Whites. Officers with graduate education have a 43.7 percentage point higher ten-year retention rate. The large probability associated with graduate education suggests that officers who intend to make the Navy a career, reflected by their ten-year retention, are subscribing to the Navy's values of higher education. Officers who commissioned via ROTC programs are associated with a 3.4 percentage point lower retention rate, while other commissioning sources are associated with a 3.8 percentage point higher rate, compared to Naval Academy graduates.

Table 14. Ten-Year Retention Model Results on Full Sample

VARIABLES	Ten_year_Retention
Lat_Trans_In	-0.0033 (0.0083)
Fem_Lat_In	0.0588*** (0.0195)
Age	0.0117*** (0.0012)
Female	-0.0589*** (0.0092)
Married_6	0.2684*** (0.0076)
Dep_Children_6	0.0833*** (0.0089)
Black_NonHisp	-0.0029 (0.0121)
Asian	-0.0100 (0.0139)
Hispanic	-0.0261** (0.0108)
Other_Unkn_Race	0.0136 (0.0177)
Grad_Educ	0.4370*** (0.0067)
ROTC	-0.0343*** (0.0088)
OCS OTS PLC	-0.0254*** (0.0097)
Direct	0.0049 (0.0146)
Other_Commissioning	0.0377*** (0.0142)
Unkn_Commissioning	0.0075 (0.0236)
Constant	-0.0406 (0.0267)
Observations	16,096
R-squared	0.4085

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*d. Ten-year Retention Model by Communities*

The ten-year retention model, found in equation (2), is also applied to the URL and RL/Staff sub-samples. Although regressions on the full sample do not find statistically significant effects of lateral transfer, effects may sometimes be negated when larger samples are pooled. Therefore, this model estimates the effect of changes in explanatory variables on the probability of ten-year retention separately for both the URL, and RL/Staff communities, as shown in Table 15.

Results show that, *ceteris paribus*, male officers who lateral transfer into the URL communities are associated with 14.3 percentage point higher ten-year retention rate compared to male officers who originate in the URL community. Male officers who lateral transfer into the RL or Staff communities on the other hand, are associated with 5.8 percentage point higher ten-year retention rate than their originating counterparts. Female RL/Staff officers or females who lateral transferred in either community, displayed insignificant results. In contrast to the MSR model, which has potential timing issues regarding additional service obligations associated with lateral transfers, the ten year model shows a more realistic representation of officer retention, as these initial service obligations have been met. Furthermore, higher retention rates for both the URL and RL/Staff communities may be an indicator of better job match for transferring officer.

Overall, retention of URL male officers is 14.3 percentage points higher than females, whereas, retention for RL/Staff male officers is 5.9 percentage points lower. Female URL officers overall, regardless of transfer, are again less likely to retain beyond ten years of service, by 6.7 percentage points, compared to their male counterparts in URL communities. Yet, both females and males who lateral transfer have higher retention rates than their female or male peers who do not transfer, specifically: 14.3 percentage points higher for URL males, 17.5 percentage points higher for RL/Staff males, and 6.7 percentage points higher for URL females.

URL officers who are married, and who have dependent children, are 23.9 and 8.1 percentage points, respectively, more likely to stay beyond ten-year retention rate

than their counterparts. RL/Staff officers also have a higher ten-year retention rate for married officers (29.4 percentage points) and officers with dependent children (7.7 percentage points) compared to their unmarried, without dependent children counterparts. Black non-Hispanic officers within the RL/Staff communities are 3.3 percentage points more likely to stay compared to White officers within the RL/Staff communities.

Professional variables of graduate education reflect higher ten-year retention rates within both the URL and RL/Staff communities. Specifically, URL and RL/Staff officers with graduate education have higher retention rates, by 43.4 and 40.0 percentage points respectively, than officers without graduate education. ROTC continued to show a lower probability of ten-year retention compared to Naval Academy, despite the community; OCS etc. and direct also show lower retention within the URL community.

Table 15. Ten-Year Retention Model Results by Communities

VARIABLES	(1) Ten_year_Retention URL	(2) Ten_year_Retention RL_Staff
Lat_In_Community	0.1432*** (0.0400)	0.0578*** (0.0131)
Fem_Lat_In_10YOS_community	-0.0311 (0.1161)	0.0206 (0.0255)
Age	0.0118*** (0.0018)	0.0136*** (0.0015)
Female	-0.0670*** (0.0116)	-0.0079 (0.0133)
Married_6	0.2693*** (0.0096)	0.2939*** (0.0126)
Dep_Children_6	0.0807*** (0.0113)	0.0768*** (0.0139)
Black_NonHisp	-0.0099 (0.0160)	0.0332** (0.0166)
Asian	-0.0207 (0.0193)	0.0313 (0.0192)
Hispanic	-0.0282* (0.0149)	-0.0089 (0.0183)
Other_Unkn_Race	0.0449* (0.0239)	-0.0009 (0.0274)
Grad_Educ	0.4339*** (0.0086)	0.4003*** (0.0105)
ROTC	-0.0464*** (0.0107)	-0.0578*** (0.0188)
OCS OTS PLC	-0.0347*** (0.0123)	-0.0254 (0.0183)
Direct	-0.2009*** (0.0450)	0.0003 (0.0209)
Other_Commissioning	0.0132 (0.0174)	0.0169 (0.0248)
Unkn_Commissioning	-0.0153 (0.0281)	-0.0030 (0.0386)
Constant	-0.0207 (0.0409)	-0.1174*** (0.0378)
Observations	10,194	5,754
R-squared	0.3889	0.4445

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 2. O4 Promotion Models

The following models estimate the probability of promotion to O4, captured by the dependent variable *Promoted\_O4*. Like the retention models, these models are applied to both the full sample of officers, as well as sub-samples of URL and RL/Staff officers.

### a. *Promotion to O4 for the Full Sample*

The LPM in equation (3) estimates the probability that an officer is selected, and promoted to, the O4 paygrade. The model uses 8,542 observations of officers who survive to the 10-year point and are eligible for promotion. Results are presented in Table 16. The *Lat\_Trans\_In* variable is utilized for the regression since promotion to O4 within the Navy's communities generally occurs around the ten years of service mark.

$$(3) \quad \Pr(Promoted\_O4 = 1|X) = \beta_0 + \beta_1 Lat\_Trans\_In + \beta_2 Fem\_Lat\_In + \beta_3 Demographics + \beta_4 Professional\ Background + \mu$$

Results indicate that males who lateral transfer are associated with 7.4 percentage point higher O4 promotion rate, compared to males who do not laterally transfer. Females, regardless of transfer status, showed insignificant results. Married officers and officers with dependent children have a higher promotion rate of 8.5 and 2.3 percentage points, respectively, than their peers. Black non-Hispanic officers are associated with a 4.2 percentage point lower promotion rate, while Hispanics show a 3.5 percentage point higher promotion rate over White officers.

Graduate education is again associated with a higher promotion rate of 21.4 percentage points, in comparison to officers without graduate education. Although graduate education shows positive results overall, this coefficient is less than the previous ten-year retention model's coefficient of 43.7 percentage points. The decreased coefficient may be a reflection of the difference between officer's perceptions regarding promotion boards, and actual board precepts. Officers may perceive graduate education to be a prerequisite for promotion, and thus acquire this professional achievement by ten years of service, in preparation for the board. Boards, however, are subject to many other constraints, and thus may select a broader scope of officers who do not necessarily have

graduate education. All commissioning programs (with the exception of ROTC and unknown sources) show significant positive results in probability of promotion over the Naval Academy. This may suggest that whatever advantage, if any, Naval Academy graduates hold is negated by the O4 board timeframe.

Table 16. Promoted to O4 Model Results on Full Sample

VARIABLES	Promoted_O4
Lat_Trans_In	0.0738*** (0.0115)
Fem_Lat_In	-0.0351 (0.0297)
Age	-0.0080*** (0.0015)
Female	0.0230 (0.0155)
Married_6	0.0849*** (0.0105)
Dep_Children_6	0.0227** (0.0108)
Black_NonHisp	-0.0418** (0.0165)
Asian	-0.0090 (0.0202)
Hispanic	0.0349** (0.0159)
Other_Unkn_Race	0.0122 (0.0249)
Grad_Educ	0.2143*** (0.0090)
ROTC	0.0173 (0.0134)
OCS_OTS_PLC	0.0792*** (0.0141)
Direct	0.1402*** (0.0212)
Other_Commissioning	0.1079*** (0.0194)
Unkn_Commissioning	-0.0910*** (0.0318)
Constant	0.7067*** (0.0363)
Observations	8,542
R-squared	0.0947

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

***b. Promotion to O4 by Communities***

The final LPM estimates the probability of promotion to O4 within the URL and RL/Staff sub-samples. Results are shown in Table 17. Holding all else constant, males who lateral transfer into the URL community are associated with 18.1 percentage point higher promotion rate than males who originate in the URL community. However, male RL/Staff officers have a lower promotion rate by 8.3 percentage points compared to their non-transfer counterparts.

Promotion rates to O4 are statistically insignificant for URL females, whereas RL/Staff females have a 3.7 percentage point higher promotion rate than RL/Staff males (significant at only the .10 level). Like the retention models, married officers show higher rates of promotion than unmarried officers. URL officers with dependent children are only slightly more likely to be promoted to O4 than their counterparts. Black non-Hispanic officers are associated with a 5.3 percentage point lower promotion rate than White officers.

URL and RL/Staff officers with graduate education are 21.6 and 26.3 percentage points, respectively, more likely to promote to O4 than their counterparts without graduate education. Compared to Naval Academy graduates, URL officers who are commissioned via ROTC, OCS and other commissioning sources all show higher promotion rates to O4. Only unknown commissioning source showed lower promotion rates for URL officers as compared to the Naval Academy.

Table 17. Promoted to O4 Model Results by Communities

VARIABLES	(1) Promoted_O4 URL	(2) Promoted_O4 RL_STAFF
Lat_In_community	0.1805*** (0.0541)	-0.0829*** (0.0165)
Fem_Lat_In_10YOS_URL	0.1116 (0.1696)	-0.0410 (0.0334)
Age	-0.0063** (0.0025)	-0.0114*** (0.0019)
Female	-0.0237 (0.0210)	0.0369** (0.0186)
Married_6	0.0987*** (0.0139)	0.0728*** (0.0159)
Dep_Children_6	0.0355** (0.0143)	0.0153 (0.0157)
Black_NonHisp	-0.0302 (0.0232)	-0.0531*** (0.0199)
Asian	0.0315 (0.0306)	-0.0457* (0.0241)
Hispanic	0.0406* (0.0232)	0.0021 (0.0234)
Other_Unkn_Race	-0.0074 (0.0348)	0.0123 (0.0349)
Grad_Educ	0.2158*** (0.0119)	0.2628*** (0.0135)
ROTC	0.0433** (0.0169)	0.0270 (0.0256)
OCS_OTS_PLC	0.1066*** (0.0188)	-0.0135 (0.0242)
Direct	-0.1219 (0.0843)	0.0201 (0.0283)
Other_Commissioning	0.1446*** (0.0247)	0.0289 (0.0316)
Unkn_Commissioning	-0.1827*** (0.0402)	0.0092 (0.0469)
Constant	0.6172*** (0.0578)	0.9183*** (0.0501)
Observations	5,298	3,445
R-squared	0.1011	0.1241

Standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

### 3. FITREP Models

The goal of these models is to determine if officers who lateral transfer perform better in their new community using FITREP scores as performance measures. If the officers achieve a better job match, it should be reflected in their fitness report scores.

The two dependent variables for the FITREP models are (1) *TraitAvg\_6to10YOS*, and (2) *AboveRS\_RelAvg\_6to10YOS*. The first dependent variable is an average of individual trait average FITREP scores received during the period (years 6 to 10) following a lateral transfer (which occurs in years 0 through 6). The second dependent variable compares, on average, the individual trait average relative to the reporting senior cumulative average, to determine if an officer is above or below the senior's overall average during the post-lateral transfer period. The following models, therefore, estimate the effect of a lateral transfer, which primarily occurs in years 0-6, and other explanatory variables, on an officer's post-transfer FITREP scores in years 6-10.

As previously mentioned in the summary statistics, BUPERS FITREP data were available only for a portion of the overall sample. The sample is further restricted to officers who stay beyond MSR to ensure that observable FITREP data exists for analysis of officer performance post-transfer. Thus, the models are limited to 2,051 URL observations, and 2,776 RL/Staff observations.

#### a. *Individual Trait Average Model*

Equation (4) reflects the OLS model that examines the determinants of individual trait averages for subsamples of URL and RL/Staff officers. These sub-samples are limited to those officers who lateral transferred prior to the MSR career point, so as to assess post-lateral transfer performance. Results are shown in columns 1 and 2 of Table 18.

$$(4) \quad \begin{aligned} TraitAvg\_6to10YOS &= \beta_0 + \beta_1 Lat\_In\_community + \beta_2 \\ &Fem\_Lat\_In\_10YOS\_community + \beta_3 Demographics + \beta_4 Professional \\ &Background + \mu \end{aligned}$$

In column 1 of Table 18, male URL officers who lateral transfer into the URL score 0.13 points lower individual trait average than male URL officers who access directly into the URL. The mean trait score for the comparison group of non-transfer males (the constant term in Table 18) = 4.84, thus a score that is 0.13 points lower is about 3% lower at the mean. Column 1 further shows that, overall, URL males score 0.86 points (roughly 18 percent) lower than URL females. URL females who transfer score 0.36 points (roughly 7 percent) higher than male non-lateral transferees, in addition to 0.36 points higher than other URL females. In summary, the results suggest that females who transfer into communities have higher trait averages than non-transfers (male or female).

In column 2, by contrast, male RL/Staff officers who transfer have a 0.92 point higher individual trait average, which is about 20 percent higher, than other non-transfer males. Overall, male RL/Staff officers score 0.14 points (roughly 3 percent) higher than RL/Staff females. RL/Staff female transfers, however, score 0.15 points (roughly 3 percent) higher than male non-lateral transferees. In comparison to males, RL/STAFF females score 0.10 points (roughly 2 percent) lower on FITREP individual trait average scores. However, RL/Staff females who transfer score 0.26 points (roughly 5 percent) higher than other females.

Among demographic factors, Black non-Hispanic officers within RL/Staff communities score 0.36 points lower than Whites in the same communities; Asians score lower than their White counterparts across all communities. Regarding professional characteristics, graduate education is associated with higher individual trait average scores in both the URL and RL/Staff communities, at 0.04 points (roughly 1 percent) and 0.11 points (roughly 2 percent), respectively. The larger point spread for RL/Staff officers suggests that within specialized communities officers with advanced education perform at higher levels than their peers. URL direct commission officers, as well as RL/Staff ROTC, direct, other and unknown commissioning all scored lower individual trait average scores as compared to Naval Academy graduates.

Table 18. Individual Trait Average Model Results

VARIABLES	(1) TraitAvg_6to10YOS URL	(2) TraitAvg_6to10YOS RL_STAFF
Lat_In_community	-0.1339*** (0.0488)	0.0916*** (0.0140)
Fem_Lat_In_10YOS_community	0.3566** (0.1517)	0.1479*** (0.0284)
Age	-0.0216*** (0.0023)	-0.0093*** (0.0015)
Female	0.0230 (0.0180)	-0.1084*** (0.0143)
Married_6	0.0369*** (0.0136)	0.0013 (0.0132)
Dep_Children_6	0.0027 (0.0132)	0.0066 (0.0127)
Black_NonHisp	-0.0208 (0.0179)	-0.0361** (0.0156)
Asian	-0.0755*** (0.0255)	-0.0466** (0.0191)
Hispanic	-0.0211 (0.0198)	0.0066 (0.0197)
Other_Unkn_Race	-0.0533 (0.0331)	0.0086 (0.0273)
Grad_Educ	0.0396*** (0.0146)	0.1131*** (0.0122)
ROTC	0.0078 (0.0168)	-0.0596*** (0.0226)
OCS OTS PLC	0.0014 (0.0182)	-0.0024 (0.0212)
Direct	-0.1514*** (0.0586)	-0.0838*** (0.0237)
Other_Commissioning	-0.0170 (0.0473)	-0.1067*** (0.0270)
Unkn_Commissioning	-0.0093 (0.0568)	-0.1234*** (0.0402)
Constant	4.8456*** (0.0529)	4.3838*** (0.0405)
Observations	2,051	2,776
R-squared	0.0864	0.2125

Standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

**b. Reporting Senior Cumulative Average Model**

This model, shown in equation (5), tests the effects of explanatory variables on whether an officer scores above or below the reporting senior's cumulative average during the post-lateral transfer period. This model is employed, in addition to the previous model, due to the nature of FITREP reporting. While trait averages may reflect the performance of an individual, it is also important to gauge how that individual compares to other officers whom the reporting senior has evaluated during his or her career (the reporting senior's cumulative average). Again, the samples are divided into URL and RL/ Staff sub-samples. Results are shown in Table 19.

$$(5) \quad \begin{aligned} AboveRS\_RelAvg\_6to10YOS &= \beta_0 + \beta_1 Lat\_In\_community + \beta_2 \\ &Fem\_Lat\_In\_10YOS\_community + \beta_3 Demographics + \beta_4 Professional \\ &Background + \mu \end{aligned}$$

Results from this model return either very small or insignificant coefficients, in part due to the limited variation in the outcome variable (values range from 0.76 to 1.26). However, officers who consistently rate above the reporting senior's cumulative average demonstrate sustained superior performance, a trait that is highly valued on promotion boards. Therefore, even though the estimated effects are small in magnitude, they may represent an important dimension of officer performance.

Male RL/Staff officers who lateral transfer score 0.01 points (roughly 1%) lower on average relative to their reporting seniors' cumulative average, compared to male officers who accessed directly into the RL/Staff communities. Female lateral transfers, on the other hand, score 0.01 points higher than male non-transfers and 0.02 points (roughly 2 percent) higher than other females. In the URL communities, regardless of gender, the lateral transfer outcome does not have a significant effect on an officer's rating relative to the reporting senior's cumulative average. Therefore, there is no evidence to suggest that URL officers who lateral transfer, and in theory have found a better job match, perform at a different level than URL officers who do not lateral transfer.

Married officers have a slightly higher score on average relative to the reporting senior's cumulative average, as compared to their counterparts. Asian officers, regardless of community, score slightly lower than Whites. Lastly, URL and RL/Staff officers with graduate education, show a 0.01 point (significant at the 0.05 level) and 0.02 point, respectively, higher score on average of rating above a senior's average, compared to officers without graduate education.

Table 19. Reporting Senior Cumulative Average Model Results

VARIABLES	(1) AboveRS_RelAvg6 to10YOS URL	(2) AboveRS_RelAvg 6to10YOS RL_STAFF
Lat_In_community	-0.0079 (0.0087)	-0.0091*** (0.0025)
Fem_Lat_In_10YOS_community	0.0298 (0.0270)	0.0135*** (0.0051)
Age	-0.0007* (0.0004)	-0.0001 (0.0003)
Female	0.0061* (0.0032)	-0.0090*** (0.0026)
Married_6	0.0068*** (0.0024)	0.0056** (0.0024)
Dep_Children_6	0.0029 (0.0024)	0.0040* (0.0023)
Black_NonHisp	-0.0076** (0.0032)	-0.0053* (0.0028)
Asian	-0.0132*** (0.0045)	-0.0107*** (0.0034)
Hispanic	-0.0089** (0.0035)	-0.0033 (0.0035)
Other_Unkn_Race	-0.0065 (0.0059)	0.0032 (0.0049)
Grad_Educ	0.0058** (0.0026)	0.0179*** (0.0022)
ROTC	-0.0073** (0.0030)	-0.0121*** (0.0041)
OCS_OTS_PLC	-0.0100*** (0.0032)	-0.0131*** (0.0038)
Direct	-0.0328*** (0.0104)	-0.0097** (0.0043)
Other_Commissioning	-0.0115 (0.0084)	-0.0075 (0.0049)
Unkn_Commissioning	0.0028 (0.0101)	-0.0059 (0.0072)
Constant	1.0340*** (0.0094)	1.0168*** (0.0073)
Observations	2,051	2,776
R-squared	0.0308	0.0484

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## C. SUMMARY

Multivariate statistical analysis is applied in this chapter to determine the effects of various explanatory variables on officer retention, promotion, and performance. LPM models measure retention outcomes at the MSR and ten-year career markers. Additionally, LPM models measure performance outcomes via promotion and FITREP metrics. Explanatory variables include demographic information, professional background, and lateral transfer variables. A summary of the specific lateral transfer results per model are shown in Table 20 and Table 21.

In the both retention models, officers who complete a lateral transfer, regardless of community, have higher retention. Overall, male officers who lateral transfer are also associated with higher promotion rates to O4; however, when broken into specific communities, only the URL officers have higher promotion rates, whereas RL/Staff officers show lower promotion rates. Interestingly, however, male URL officers who lateral transfer have lower individual trait average FITREP scores than their non-transfer counterparts, whereas RL/Staff officers who lateral transfer have higher individual trait average scores. Female lateral transfers, regardless of community, score higher trait averages than their male non-transfer and female peers.

Table 20. Summary of Lateral Transfer Effects for Males

Marginal Effects			
Model	Full Sample	URL	RL/STAFF
MSR Retention	0.1683*** (0.0105) N=12,793	0.1502*** (0.0550) N=5,760	0.1090*** (0.0162) N=5,357
10-Year Retention	-0.0033 (0.0083) N=16,096	0.1432*** (0.0400) N=10,194	0.0578*** (0.0131) N=5,754
O4 Promotion	0.0738*** (0.0115) N=8,542	0.1805*** (0.0541) N=5,298	-0.0829*** (0.0165) N=3,445
Effects of Lateral Transfer			
Trait Average	- - -	-0.1339*** (0.0488) N=2,051	0.0916*** (0.0140) N=2,776
Above RS Average	- - -	-0.0079 (0.0087) N=2,051	-0.0091*** (0.0025) N=2,776

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 21. Summary of Lateral Transfer Effects for Females

Marginal Effects			
Model	Full Sample	URL	RL/STAFF
MSR Retention	0.0830*** (0.0235) N=12,793	-0.1884 (0.2091) N=5,760	0.1297*** (0.0316) N=5,357
10-Year Retention	0.0588*** (0.0195) N=16,096	-0.0311 (0.1161) N=10,194	0.0206 (0.0255) N=5,754
O4 Promotion	-0.0351 (0.0297) N=8,542	0.1116 (0.1696) N=5,298	-0.0410 (0.0334) N=3,445
Effects of Lateral Transfer			
Trait Average	- - -	0.3566** (0.1517) N=2,051	0.1479*** (0.0284) N=2,776
Above RS Average	- - -	0.0298 (0.0270) N=2,051	0.0135*** (0.0051) N=2,776

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Females tend to have lower probabilities of both MSR and ten-year retention, regardless of community; however, promotion rates are no different between males and females. Generally, females who also lateral transfer show higher retention rates; however, when broken into specific communities, only female RL/Staff laterals in the MSR model produced significant results. Female RL/Staff officers score lower than males on both individual trait average and relative to reporting senior cumulative averages. However, females who lateral transfer have higher individual trait averages and ranking relative to reporting senior's cumulative average than their counterparts and peers.

## VI. SUMMARY AND CONCLUSION

### A. SUMMARY

The Department of Defense and Department of the Navy have instituted several initiatives in support of one of the military's most vital assets, its personnel. To that end, the Secretary of the Navy has enacted several other initiatives which fall within the Talent Management scope, aimed at identifying and retaining high-quality personnel. The measures for quality, however, are tied to the values of the organization and may be difficult to define. This thesis addresses the issue of officer quality by examining the effect of the Navy's lateral transfer and redesignation process on officer job match. Although the lateral transfer process is not in-and-of-itself an indicator of quality, the process can act as a mechanism to improve the job match of Navy officers. More appropriate job matches (especially when considering the diversity of officer communities) have the potential to improve the performance and retention of officers, thus achieving the intended goals of Talent Management.

The thesis' research questions, therefore, focus on how retention and performance of officers who lateral transfer differ from other officers, as well as on identifying what other factors predict differences in retention and performance measures. Retention is measured by staying beyond the initial service obligation, or MSR, and staying for ten years of service. Performance is measured by promotion to O4 and via scores on FITREPs. Other factors are identified by various demographic and professional background characteristics.

Previous studies also have examined the effects of lateral transfer on retention and/or separation, promotion, and community health. Kleyman and Parcell (2010) and Ryan (2007) find that, among applicants for lateral transfer, being denied selection increases the likelihood of separation. Moore and Reese (1997) analyze URL communities and identify a high number of training attrites who separate from the Navy, and that officers who did redesignate show only slight differences in retention and promotion rates. Mundell (2016) finds that promotion rates are higher for officers who

have lateral transferred. Additionally, Kleyman and Parcell find higher separation rates for officers who are not selected for promotion.

Sample data utilized in this thesis consists of longitudinal data that captures information on officers who entered the Navy from 1999 to 2003, and tracks them until 2016 or separation. Summary statistics show that transfers are highest in the early years of an officer's career, and tend to fall as years of service increase, suggesting that job match quality tends to improve over time. The flow of transfers is also consistent with Rodney and Kearn's (2008) research, showing that the majority of transfers are from the URL communities to the RL/Staff communities.

Multivariate models of career outcomes (retention, promotion, and FITREP scores) are applied to all officers, as well to sub-samples of URL and RL/Staff officers. In both the MSR and ten-year retention models, officers who lateral transfer are associated with higher retention rates, regardless of community. These findings are complementary to those of Kleyman and Parcell (2010) and Ryan (2007) who find that non-selection for lateral transfer increases separation rates. Male officers who lateral transfer are also associated with higher promotion rates to O4 for the full sample. However, when grouped by community, only the URL officers show a significantly higher likelihood of promotion, whereas RL/Staff officers show a lower likelihood to promote. Lateral transfer effects on promotion to O4 for female officers were insignificant. These results differ somewhat from those of Moore and Reese (1997) who find only slight differences in retention and promotion for officers who transfer within the URL communities. FITREP models show that male officers who lateral transfer into the URL communities are associated with lower individual trait average scores, whereas female URL and all RL/Staff officer transfers have higher trait average scores as compared to those who originated within the community.

In addition to lateral transfer, there are several other demographic and professional background factors which impact retention and performance measures. Overall, female officers have lower retention rates in both the URL and RL/Staff communities. Yet, female officers who lateral transfer have higher MSR and ten-year retention rates than males who do not transfer in the full sample, as well as for MSR

within the RL/Staff samples. Performance wise, both URL and RL/Staff females who lateral transfer have higher FITREP individual trait averages scores than their counterparts.

## **B. QUALIFICATIONS**

Due to weaknesses in the data supplied by the Navy for this study, there are qualifications to the research that should be mentioned. Firstly, the dataset did not distinguish between officers who laterally transferred versus those who redesignated. Hence, in this study these groups were combined. Although the distinction is subtle, it is important to note that all lateral transfers result in redesignation, whereas not all redesignations result from lateral transfer. Board action is required for both; however, the issue of self-selection arises for officers who apply to the lateral transfer board. This is also at the root of the second limitation. Due to the inherent policies and practices of the lateral transfer boards, not all those who apply for transfer are selected. The dataset utilized in this study only captures the change in designator of officers. Therefore, the data only reflects officers who apply and are selected for transfer; officers who applied for lateral transfer but are rejected are grouped with the officers who never apply to the board.

Every effort was made to alleviate these limitations within the dataset, by coordinating with the Active Duty Redesignation Selection Board sponsor, NAVPERS-803. However, due to difficulties of transferring sensitive personal data, in addition to the time constraints of thesis work, the appropriate board data was not acquired in time to be applied to this study. Therefore, it is recommended to utilize board-specific data in future research to address the issues of self-selection in the lateral transfer and redesignation process.

## **C. CONCLUSIONS**

This study provides statistical evidence that shows officers who lateral transfer are more likely to stay in the Navy past the MSR career point and to ten-years of service, regardless of community or gender. Combined with the previous literature, it appears safe to conclude that the Navy's lateral transfer and redesignation process is an effective

retention tool. Historically, female retention has been a challenge for the Navy; however, this research shows that females who lateral transfer have higher retention rates. Therefore, by providing greater career flexibility the lateral transfer process can improve female officer retention. Additionally, male officers who lateral transfer are more likely to promote to the O4 paygrade, as they have demonstrated the quality characteristics which resulted in their selection for promotion. Although promotion outcomes for female lateral transfers were insignificant, this may be due to their overall under-representation in the Navy. Thus, promotion rates among females might see improvement as overall retention rates also increase.

Further review of the lateral transfer and redesignation process may therefore help to improve the effectiveness of the program. Similar to Kleyman and Parcell's (2010) study, releasing/gaining community quotas should be analyzed to ensure efficiency or that the maximum numbers of transfer are allowed to occur. Additionally, review of OCM coordination processes or instituting applicant feedback processes might reveal opportunities to improve upon the lateral transfer process as a whole. These changes could help the Navy to capitalize on the lateral transfer process to improve retention of quality individuals as a part of the Talent Management initiative.

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